



**Montana Department of
ENVIRONMENTAL QUALITY**

MAILED
6-19-07 gk

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

June 18, 2007

Mr. Ben Sautter
CITY OF HELENA
City/County Building
316 N. Park Avenue
Helena, MT 59623

**RE: CITY OF HELENA CLOSED LANDFILL – LICENSE #90 – GROUNDWATER REPORTS REVIEW
FEBRUARY 2007 EVALUATION OF GROUNDWATER EXTRACTION SYSTEM PERFORMANCE AND
LANDFILL GAS EXTRACTION SYSTEM PERFORMANCE AT THE HELENA LANDFILL
DATA VALIDATION REPORT FOR DECEMBER 2006 GROUNDWATER QUALITY DATA
MARCH 2007 GROUNDWATER SAMPLING RESULTS**

Dear Mr. Sautter:

The Department has reviewed the above noted reports submitted by Hydrometrics, Inc., on behalf of the City of Helena. The groundwater monitoring reports meet the requirements of the Administrative Rules of Montana (ARM) Section 17.50.708.

The Department appreciates the City's efforts towards the continued improvement of the groundwater quality beneath the site. Based on the data provided in the report, the Department agrees that the landfill gas extractions systems, the gas interception trench, and the groundwater extraction system operating in concert has proven effective towards the reduction in contaminant concentrations at the closed landfill.

If you have any questions or comments regarding this review, please do not hesitate to contact me at the Permitting and Compliance Division, Waste and Underground Tank Management Bureau, Solid Waste Program.

Respectfully,

Mary Louise Hendrickson
Environmental Science Specialist
Solid Waste Regulatory Program
Phone: 406-444-1808; Fax: 406-444-1374
Email: mhendrickson@mt.gov

cc: Ms. Jodi Bingham, Hydrometrics, Inc., 3020 Bozeman Ave., Helena, MT 59601

File: Lewis and Clark County/City of Helena Landfill (Closed)/License 90/Groundwater Monitoring

Path: G:\WUT\SWS\GWater\Responses\L & C\CityofHelena\closedHelena-0606review.doc

Correspondence Slip

Project ID: _____

Requested: _____

Needed By: _____

Originator: _____

Org(s)/Mail Code: _____

REVIEW
ROUTING

Name

Task

Initial/Date

Admin

Proof

Daniel

Rick

2

df 6/18

ccs 6/18

RT 6-18-2007

Mail original via:

☒ Regular ☐ Certified ☐ Registered ☐ FedEx

Fax to addressee at:

Proof Path: G:\WUT\

See letter

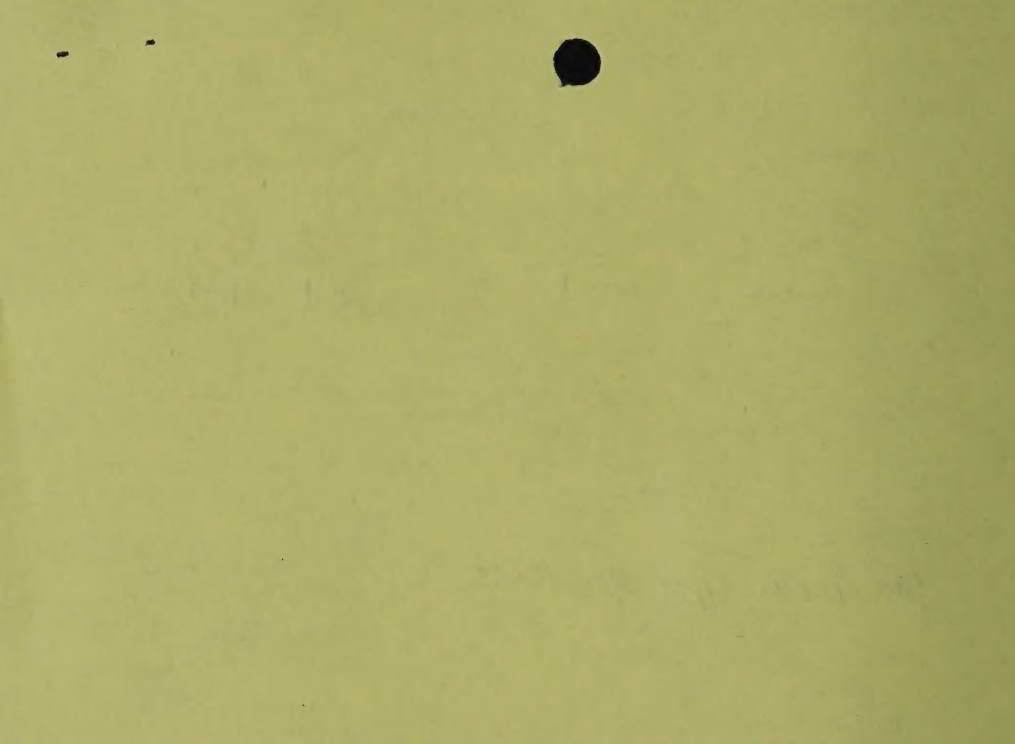
Special Instructions:

pls make copy for MCH

Mail copy of enclosures
to CC's? Y N

Copies of enclosures
for file needed? Y N

Copy of letter for file
needed? Y N





Montana Department of
ENVIRONMENTAL QUALITY

MAILED

9-11-01

Marc Racicot, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • E-mail: www.deq.state.mt.us

September 7, 2001

John Rundquist
City of Helena
316 North Park
Helena, Montana 59623

**RE: LEWIS & CLARK COUNTY, CITY OF HELENA CLASS II (INACTIVE)
LANDFILL – LICENSE NO. 90
GROUND WATER MONITORING – CORRECTIVE MEASURES SAMPLING**

Dear Mr. Rundquist:

Sampling requirements set forth in a letter dated September 13, 1999, from Mr. Pat Crowley to the city, strongly suggest yearly start-up sampling for the ground water remediation system. For the year 2000, we received results from samples collected at the golf course pond and sprinkler in September 2000. I have no record of sampling (start-up and monthly) for the remediation system in 2001.

Mr. Crowley's September 13, 1999 letter required monthly sampling during the first season of operation. To the best of the Department's knowledge, the first season of land application was the summer of 2000. I have not been able to locate this data, either.

It is important to test and document contaminant concentration levels to insure concentrations are below the required reporting values (RRVs) before the treated water is discharged for land application. In order to remain in compliance, it is important all sampling data be submitted to the Department in a timely manner.

If you have any questions, I may be contacted at the Permitting and Compliance Division, Community Services Bureau, Waste Management Section, phone (406)444-0538.

Sincerely,

Pat Potts

Environmental Specialist– Solid Waste Program

cc: Jodi Bingham, Hydrometrics, Inc., Helena, MT

UNITED

INITIALS p³DATE 8/28/01

SW OUTGOING CORRESPONDENCE 2001

☐ NEW APPLICATION/LICENSE

Initial / Date

Mike D.
Janet H.
HAC
Rick T.
Jon D./ Other

☐ HEALTH OFFICER CARD

Initial / Date

Mike D.
Karen
HAC

☐ INSPECTIONS

Initial / Date

Pat C.
Janet H.
Karen
Rick T.

☐ CLOSURES

Initial / Date

Mike D.
Janet H.
Karen
HAC
Rick T./ Other

☐ FEES

Initial / Date

Mike D.
Janet H.
HAC

☐ COMPLAINTS

Initial / Date

Pat C.
Janet H.
Karen

☒ GROUND WATER

Initial / Date

Janet H.
Pat C.
Rick T.

4h-8-28-01
FEC 9/6/01
RI 9-6-01

☐ GENERAL CORRESPONDENCE

Initial / Date

Pat C. / Mike D.
Janet H.
Rick T.
Jon D./ Other

☐ MISCELLANEOUS

Initial / Date

FILE
Path

Lewis + Clark Co #90
City of Helena
grd wtr man (Corr. Meas)





Hydrometrics, Inc.

consulting scientists and engineers

November 30, 2006

Ms. Mary Louise Hendrickson
Environmental Science Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Waste & Underground Tank Management Bureau
Solid Waste Program
P.O. Box 200901
Helena, MT 59620

RE: Helena Landfill Groundwater Treatment System Compliance Sampling Results for
Irrigation Season 2006

Dear Mary Louise,

On behalf of the City of Helena, Hydrometrics has conducted monthly sampling of the Bill Roberts Golf Course collection pond and sprinkler system during the 2006 irrigation season. These samples reflect the water quality of the groundwater extracted as part of the Helena Landfill groundwater remediation system prior to land application on the golf course. Although some residual concentration of chloroform and tetrachloroethene were present in the pond samples, concentrations of all volatile organic compounds were below the detection limit of 0.0005 mg/mL or 0.5 ppb for all of the sprinkler samples. This meets the compliance requirements submitted by MDEQ for the groundwater treatment system. I have included the laboratory analytical reports for all surface water samples collected this year for your review.

If you have any questions concerning this information, please don't hesitate to call.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

Enclosure

c: John Rundquist, City of Helena
Ben Sautter, City of Helena
Mike Wignot, Hydrometrics

7 *mlk*
RECEIVED

DEC 01 2006

Dept. of Enviro. Quality
Waste & Underground
Tank Management Bureau

Closed
County Lewis and Clark
Facility & # City of Helena #80
Closure Landfarm
Finan Assur Liner
GW Corr Meas Methane
GW Monitoring O & M
GW Reports Run-on
Inspections
Other: _____





Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 30, 2006

Ms. Mary Louise Hendrickson
Environmental Science Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Waste & Underground Tank Management Bureau
Solid Waste Program
P.O. Box 200901
Helena, MT 59620

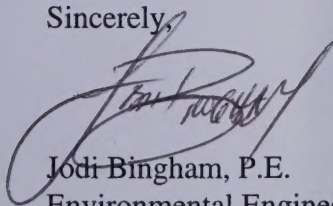
RE: Helena Landfill Groundwater Treatment System Compliance Sampling Results for
Irrigation Season 2006

Dear Mary Louise,

On behalf of the City of Helena, Hydrometrics has conducted monthly sampling of the Bill Roberts Golf Course collection pond and sprinkler system during the 2006 irrigation season. These samples reflect the water quality of the groundwater extracted as part of the Helena Landfill groundwater remediation system prior to land application on the golf course. Although some residual concentration of chloroform and tetrachloroethene were present in the pond samples, concentrations of all volatile organic compounds were below the detection limit of 0.0005 mg/mL or 0.5 ppb for all of the sprinkler samples. This meets the compliance requirements submitted by MDEQ for the groundwater treatment system. I have included the laboratory analytical reports for all surface water samples collected this year for your review.

If you have any questions concerning this information, please don't hesitate to call.

Sincerely,



Jodi Bingham, P.E.
Environmental Engineer/Chemist

Enclosure

c: John Rundquist, City of Helena
Ben Sautter, City of Helena
Mike Wignot, Hydrometrics

mlh
RECEIVED

DEC 01 2006

Dept. of Enviro. Quality
Waste & Underground
Tank Management Bureau

ANALYTICAL SUMMARY REPORT

June 06, 2006

Richard Lane

Hydrometrics Inc

3020 Bozeman Ave.

Helena, MT 59601

Workorder No.: H06050252

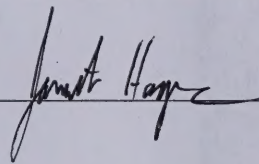
Project Name: 1273 City of Helena

Energy Laboratories Inc received the following 2 samples from Hydrometrics Inc on 5/23/2006 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H06050252-001	CHHL-0605 100	05/23/06 10:00	05/23/06	Aqueous	8260-Volatile Organic Comp, 40 CFR Part 258 App I
H06050252-002	CHHL-0605-101	05/23/06 10:15	05/23/06	Aqueous	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By: 

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena
Lab ID: H06050252-001
Client Sample ID: CHHL-0605 100

Pond

Report Date: 06/06/06
Collection Date: 05/23/06 10:00
Date Received: 05/23/06
Matrix: Aqueous

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	06/01/06 13:05 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	06/01/06 13:05 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	06/01/06 13:05 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Chloroform	0.21	ug/L	J	0.50		SW8260B	06/01/06 13:05 / eli-b
Chloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	06/01/06 13:05 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		2.0		SW8260B	06/01/06 13:05 / eli-b
Dichlorodifluoromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	06/01/06 13:05 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	06/01/06 13:05 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	06/01/06 13:05 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	06/01/06 13:05 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Tetrachloroethene	0.42	ug/L	J	0.50		SW8260B	06/01/06 13:05 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

Definitions: QCL - Quality control limit.

ND - Not detected at the reporting limit.

J - Estimated value. The analyte was present but less than the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena
Lab ID: H06050252-001
Client Sample ID: CHHL-0605 100

Report Date: 06/06/06
Collection Date: 05/23/06 10:00
Date Received: 05/23/06
Matrix: Aqueous

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Trichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	06/01/06 13:05 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	06/01/06 13:05 / eli-b
Surr: 1,2-Dichloroethane-d4	89.0	%REC			70-130	SW8260B	06/01/06 13:05 / eli-b
Surr: Dibromofluoromethane	94.0	%REC			77-126	SW8260B	06/01/06 13:05 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC			76-127	SW8260B	06/01/06 13:05 / eli-b
Surr: Toluene-d8	96.0	%REC			79-122	SW8260B	06/01/06 13:05 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena
Lab ID: H06050252-002
Client Sample ID: CHHL-0605-101

Sprinkler

Report Date: 06/06/06
Collection Date: 05/23/06 10:15
Date Received: 05/23/06
Matrix: Aqueous

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	06/01/06 13:55 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	06/01/06 13:55 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	06/01/06 13:55 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Chloromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	06/01/06 13:55 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		2.0		SW8260B	06/01/06 13:55 / eli-b
Dichlorodifluoromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	06/01/06 13:55 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	06/01/06 13:55 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	06/01/06 13:55 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	06/01/06 13:55 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Tetrachloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena
Lab ID: H06050252-002
Client Sample ID: CHHL-0605-101

Report Date: 06/06/06
Collection Date: 05/23/06 10:15
Date Received: 05/23/06
Matrix: Aqueous

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Trichloroethene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	06/01/06 13:55 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	06/01/06 13:55 / eli-b
Surr: 1,2-Dichloroethane-d4	89.0	%REC			70-130	SW8260B	06/01/06 13:55 / eli-b
Surr: Dibromofluoromethane	94.0	%REC			77-126	SW8260B	06/01/06 13:55 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC			76-127	SW8260B	06/01/06 13:55 / eli-b
Surr: Toluene-d8	96.0	%REC			79-122	SW8260B	06/01/06 13:55 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R76679		
Sample ID: Ics060106	Laboratory Control Sample			Run: SUB-B76679			06/01/06 11:21		
Acetone	55.6	ug/L	20	111	62	130			
Acrylonitrile	50.0	ug/L	20	100	60	130			
Benzene	4.56	ug/L	0.50	91	71	133			
Bromochloromethane	4.76	ug/L	0.50	95	68	131			
Bromodichloromethane	4.48	ug/L	0.50	90	67	138			
Bromoform	4.52	ug/L	0.50	90	64	136			
Bromomethane	4.60	ug/L	0.50	92	60	138			
Carbon disulfide	4.40	ug/L	1.0	88	46	146			
Carbon tetrachloride	4.56	ug/L	0.50	91	61	144			
Chlorobenzene	4.56	ug/L	0.50	91	78	136			
Chlorodibromomethane	4.56	ug/L	0.50	91	72	136			
Chloroethane	4.88	ug/L	0.50	98	64	136			
Chloroform	4.40	ug/L	0.50	88	69	133			
Chloromethane	4.40	ug/L	0.50	88	63	149			
1,2-Dibromo-3-chloropropane	5.00	ug/L	1.0	100	63	125			
1,2-Dibromoethane	4.68	ug/L	0.50	94	75	131			
Dibromomethane	4.48	ug/L	0.50	90	72	133			
1,2-Dichlorobenzene	4.32	ug/L	0.50	86	78	129			
1,4-Dichlorobenzene	4.56	ug/L	0.50	91	78	132			
trans-1,4-Dichloro-2-butene	4.40	ug/L	2.0	88	50	142			
Dichlorodifluoromethane	5.32	ug/L	0.50	106	55	141			
1,1-Dichloroethane	4.44	ug/L	0.50	89	72	130			
1,2-Dichloroethane	4.40	ug/L	0.50	88	57	146			
1,1-Dichloroethene	4.08	ug/L	0.50	82	66	142			
cis-1,2-Dichloroethene	4.44	ug/L	0.50	89	74	133			
trans-1,2-Dichloroethene	4.44	ug/L	0.50	89	76	138			
1,2-Dichloropropane	4.60	ug/L	0.50	92	72	135			
cis-1,3-Dichloropropene	4.80	ug/L	0.50	96	75	132			
trans-1,3-Dichloropropene	5.12	ug/L	0.50	102	77	145			
Ethylbenzene	4.52	ug/L	0.50	90	78	131			
2-Hexanone	47.2	ug/L	20	94	72	131			
Iodomethane	4.92	ug/L	1.0	98	66	132			
Methyl ethyl ketone	36.6	ug/L	20	73	55	145			
Methyl isobutyl ketone	44.4	ug/L	20	89	73	129			
Methylene chloride	4.24	ug/L	0.50	85	73	126			
Styrene	4.72	ug/L	0.50	94	76	134			
1,1,1,2-Tetrachloroethane	4.68	ug/L	0.50	94	75	135			
1,1,2,2-Tetrachloroethane	4.84	ug/L	0.50	97	72	132			
Tetrachloroethene	4.68	ug/L	0.50	94	78	137			
Toluene	4.56	ug/L	0.50	91	78	134			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R76679		
Sample ID: lcs060106	Laboratory Control Sample				Run: SUB-B76679		06/01/06 11:21		
1,1,1-Trichloroethane	4.40	ug/L	0.50	88	64	141			
1,1,2-Trichloroethane	3.97	ug/L	0.50	79	72	133			
Trichloroethene	4.60	ug/L	0.50	92	75	138			
Trichlorofluoromethane	4.48	ug/L	0.50	90	58	139			
1,2,3-Trichloropropane	4.76	ug/L	0.50	95	67	133			
Vinyl acetate	4.64	ug/L	1.0	93	42	120			
Vinyl chloride	5.20	ug/L	0.50	104	66	140			
m+p-Xylenes	9.12	ug/L	0.50	91	78	133			
o-Xylene	4.56	ug/L	0.50	91	79	136			
Surr: 1,2-Dichloroethane-d4			0.040	94	70	130			
Surr: Dibromofluoromethane			0.50	97	77	126			
Surr: p-Bromofluorobenzene			0.040	96	76	127			
Surr: Toluene-d8			0.040	97	79	122			
Sample ID: mblk060106	Method Blank				Run: SUB-B76679		06/01/06 12:30		
Acetone	ND	ug/L	20						
Acrylonitrile	ND	ug/L	20						
Benzene	ND	ug/L	0.50						
Bromochloromethane	ND	ug/L	0.50						
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Bromomethane	ND	ug/L	0.50						
Carbon disulfide	ND	ug/L	1.0						
Carbon tetrachloride	ND	ug/L	0.50						
Chlorobenzene	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Chloromethane	ND	ug/L	0.50						
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0						
1,2-Dibromoethane	ND	ug/L	0.50						
Dibromomethane	ND	ug/L	0.50						
1,2-Dichlorobenzene	ND	ug/L	0.50						
1,4-Dichlorobenzene	ND	ug/L	0.50						
trans-1,4-Dichloro-2-butene	ND	ug/L	2.0						
Dichlorodifluoromethane	ND	ug/L	0.50						
1,1-Dichloroethane	ND	ug/L	0.50						
1,2-Dichloroethane	ND	ug/L	0.50						
1,1-Dichloroethene	ND	ug/L	0.50						
cis-1,2-Dichloroethene	ND	ug/L	0.50						
trans-1,2-Dichloroethene	ND	ug/L	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R76679		
Sample ID: mblk060106	Method Blank		Run: SUB-B76679				06/01/06 12:30		
1,2-Dichloropropane	ND	ug/L	0.50						
cis-1,3-Dichloropropene	ND	ug/L	0.50						
trans-1,3-Dichloropropene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
2-Hexanone	ND	ug/L	20						
Iodomethane	ND	ug/L	1.0						
Methyl ethyl ketone	ND	ug/L	20						
Methyl isobutyl ketone	ND	ug/L	20						
Methylene chloride	ND	ug/L	0.50						
Styrene	ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50						
Tetrachloroethene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
1,1,1-Trichloroethane	ND	ug/L	0.50						
1,1,2-Trichloroethane	ND	ug/L	0.50						
Trichloroethene	ND	ug/L	0.50						
Trichlorofluoromethane	ND	ug/L	0.50						
1,2,3-Trichloropropane	ND	ug/L	0.50						
Vinyl acetate	ND	ug/L	1.0						
Vinyl chloride	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.040	92	70	130			
Surr: Dibromofluoromethane			0.50	97	77	126			
Surr: p-Bromofluorobenzene			0.040	95	76	127			
Surr: Toluene-d8			0.040	93	79	122			
Sample ID: B06052171-001Dms	Sample Matrix Spike		Run: SUB-B76679				06/02/06 01:33		
Acetone	110	ug/L	40	110	62	130	0.0	20	
Acrylonitrile	105	ug/L	40	105	60	130	0.0	20	
Benzene	8.72	ug/L	2.0	87	71	133	0.0	20	
Bromochloromethane	8.56	ug/L	2.0	86	68	131	0.0	20	
Bromodichloromethane	8.96	ug/L	2.0	90	67	138	0.0	20	
Bromoform	8.48	ug/L	2.0	85	64	136	0.0	20	
Bromomethane	10.8	ug/L	2.0	108	60	138	0.0	20	
Carbon disulfide	9.12	ug/L	2.0	91	46	146	0.0	20	
Carbon tetrachloride	8.72	ug/L	2.0	87	61	144	0.0	20	
Chlorobenzene	9.12	ug/L	2.0	91	78	136	0.0	20	
Chlorodibromomethane	8.80	ug/L	2.0	88	72	136	0.0	20	
Chloroethane	10.4	ug/L	2.0	104	64	136	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R76679		
Sample ID: B06052171-001Dms	Sample Matrix Spike		Run: SUB-B76679				06/02/06 01:33		
Chloroform	8.64	ug/L	2.0	86	69	133	0.0	20	
Chloromethane	10.6	ug/L	2.0	106	63	149	0.0	20	
1,2-Dibromo-3-chloropropane	8.64	ug/L	2.0	86	63	125	0.0	20	
1,2-Dibromoethane	9.28	ug/L	2.0	93	75	131	0.0	20	
Dibromomethane	9.20	ug/L	2.0	92	72	133	0.0	20	
1,2-Dichlorobenzene	8.88	ug/L	2.0	89	78	129	0.0	20	
1,4-Dichlorobenzene	8.48	ug/L	2.0	85	78	132	0.0	20	
trans-1,4-Dichloro-2-butene	9.36	ug/L	2.0	94	50	142	0.0	20	
Dichlorodifluoromethane	11.9	ug/L	2.0	119	55	141	0.0	20	
1,1-Dichloroethane	8.64	ug/L	2.0	86	72	130	0.0	20	
1,2-Dichloroethane	7.67	ug/L	2.0	77	57	146	0.0	20	
1,1-Dichloroethene	8.16	ug/L	2.0	82	66	142	0.0	20	
cis-1,2-Dichloroethene	8.72	ug/L	2.0	87	74	133	0.0	20	
trans-1,2-Dichloroethene	8.64	ug/L	2.0	86	76	138	0.0	20	
1,2-Dichloropropane	9.28	ug/L	2.0	93	72	135	0.0	20	
cis-1,3-Dichloropropene	8.96	ug/L	2.0	90	75	132	0.0	20	
trans-1,3-Dichloropropene	9.60	ug/L	2.0	96	77	145	0.0	20	
Ethylbenzene	9.12	ug/L	2.0	91	78	131	0.0	20	
2-Hexanone	96.0	ug/L	40	96	72	131	0.0	20	
Iodomethane	10.2	ug/L	2.0	102	66	132	0.0	20	
Methyl ethyl ketone	87.2	ug/L	40	87	55	145	0.0	20	
Methyl isobutyl ketone	84.0	ug/L	40	84	73	129	0.0	20	
Methylene chloride	8.08	ug/L	2.0	81	73	126	0.0	20	
Styrene	9.52	ug/L	2.0	95	76	134	0.0	20	
1,1,1,2-Tetrachloroethane	8.96	ug/L	2.0	90	75	135	0.0	20	
1,1,2,2-Tetrachloroethane	9.60	ug/L	2.0	96	72	132	0.0	20	
Tetrachloroethene	8.88	ug/L	2.0	89	78	137	0.0	20	
Toluene	9.60	ug/L	2.0	96	78	134	0.0	20	
1,1,1-Trichloroethane	8.40	ug/L	2.0	84	64	141	0.0	20	
1,1,2-Trichloroethane	9.28	ug/L	2.0	93	72	133	0.0	20	
Trichloroethene	8.96	ug/L	2.0	90	75	138	0.0	20	
Trichlorofluoromethane	10.3	ug/L	2.0	103	58	139	0.0	20	
1,2,3-Trichloropropane	9.04	ug/L	2.0	90	67	133	0.0	20	
Vinyl acetate	9.20	ug/L	2.0	92	42	120	0.0	20	
Vinyl chloride	10.6	ug/L	2.0	106	66	140	0.0	20	
m+p-Xylenes	18.4	ug/L	2.0	92	78	133	0.0	20	
o-Xylene	9.28	ug/L	2.0	93	79	136	0.0	20	
Surr: 1,2-Dichloroethane-d4			2.0	90	70	130			
Surr: Dibromofluoromethane			2.0	96	77	126			
Surr: p-Bromofluorobenzene			2.0	96	76	127			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: B_R76679
Sample ID: B06052171-001Dms	Sample Matrix Spike		Run: SUB-B76679						06/02/06 01:33
Surr: Toluene-d8			2.0	100	79	122			
Sample ID: B06052171-001Dmsd	Sample Matrix Spike Duplicate		Run: SUB-B76679						06/02/06 02:07
Acetone	116	ug/L	40	116	62	130	5.7	20	
Acrylonitrile	105	ug/L	40	105	60	130	0.0	20	
Benzene	8.96	ug/L	2.0	90	71	133	2.7	20	
Bromochloromethane	8.88	ug/L	2.0	89	68	131	3.7	20	
Bromodichloromethane	8.56	ug/L	2.0	86	67	138	4.6	20	
Bromoform	8.56	ug/L	2.0	86	64	136	0.9	20	
Bromomethane	10.6	ug/L	2.0	106	60	138	2.2	20	
Carbon disulfide	9.28	ug/L	2.0	93	46	146	1.7	20	
Carbon tetrachloride	8.64	ug/L	2.0	86	61	144	0.9	20	
Chlorobenzene	8.80	ug/L	2.0	88	78	136	3.6	20	
Chlorodibromomethane	8.64	ug/L	2.0	86	72	136	1.8	20	
Chloroethane	10.4	ug/L	2.0	104	64	136	0.0	20	
Chloroform	8.72	ug/L	2.0	87	69	133	0.9	20	
Chloromethane	9.92	ug/L	2.0	99	63	149	7.0	20	
1,2-Dibromo-3-chloropropane	8.32	ug/L	2.0	83	63	125	3.8	20	
1,2-Dibromoethane	9.04	ug/L	2.0	90	75	131	2.6	20	
Dibromomethane	8.88	ug/L	2.0	89	72	133	3.5	20	
1,2-Dichlorobenzene	8.88	ug/L	2.0	89	78	129	0.0	20	
1,4-Dichlorobenzene	8.64	ug/L	2.0	86	78	132	1.9	20	
trans-1,4-Dichloro-2-butene	9.60	ug/L	2.0	96	50	142	2.5	20	
Dichlorodifluoromethane	11.8	ug/L	2.0	118	55	141	1.4	20	
1,1-Dichloroethane	8.72	ug/L	2.0	87	72	130	0.9	20	
1,2-Dichloroethane	8.16	ug/L	2.0	82	57	146	6.2	20	
1,1-Dichloroethene	8.08	ug/L	2.0	81	66	142	1.0	20	
cis-1,2-Dichloroethene	8.80	ug/L	2.0	88	74	133	0.9	20	
trans-1,2-Dichloroethene	8.72	ug/L	2.0	87	76	138	0.9	20	
1,2-Dichloropropane	9.28	ug/L	2.0	93	72	135	0.0	20	
cis-1,3-Dichloropropene	8.80	ug/L	2.0	88	75	132	1.8	20	
trans-1,3-Dichloropropene	9.04	ug/L	2.0	90	77	145	6.0	20	
Ethylbenzene	8.80	ug/L	2.0	88	78	131	3.6	20	
2-Hexanone	96.8	ug/L	40	97	72	131	0.8	20	
Iodomethane	10.2	ug/L	2.0	102	66	132	0.0	20	
Methyl ethyl ketone	88.0	ug/L	40	88	55	145	0.9	20	
Methyl isobutyl ketone	80.0	ug/L	40	80	73	129	4.9	20	
Methylene chloride	7.65	ug/L	2.0	76	73	126	5.5	20	
Styrene	9.20	ug/L	2.0	92	76	134	3.4	20	
1,1,1,2-Tetrachloroethane	8.72	ug/L	2.0	87	75	135	2.7	20	
1,1,2,2-Tetrachloroethane	9.60	ug/L	2.0	96	72	132	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc
Project: 1273 City of Helena

Report Date: 06/06/06
Work Order: H06050252

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R76679		
Sample ID: B06052171-001Dmsd	Sample Matrix Spike Duplicate				Run: SUB-B76679			06/02/06 02:07	
Tetrachloroethene	8.72	ug/L	2.0	87	78	137	1.8	20	
Toluene	9.28	ug/L	2.0	93	78	134	3.4	20	
1,1,1-Trichloroethane	8.48	ug/L	2.0	85	64	141	0.9	20	
1,1,2-Trichloroethane	8.32	ug/L	2.0	83	72	133	11	20	
Trichloroethene	8.72	ug/L	2.0	87	75	138	2.7	20	
Trichlorofluoromethane	10.2	ug/L	2.0	102	58	139	0.8	20	
1,2,3-Trichloropropane	9.20	ug/L	2.0	92	67	133	1.8	20	
Vinyl acetate	9.60	ug/L	2.0	96	42	120	4.3	20	
Vinyl chloride	10.5	ug/L	2.0	105	66	140	1.5	20	
m+p-Xylenes	18.0	ug/L	2.0	90	78	133	2.2	20	
o-Xylene	8.96	ug/L	2.0	90	79	136	3.5	20	
Surr: 1,2-Dichloroethane-d4			2.0	92	70	130			
Surr: Dibromofluoromethane			2.0	96	77	126			
Surr: p-Bromofluorobenzene			2.0	96	76	127			
Surr: Toluene-d8			2.0	99	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

[illegible]



Energy Laboratories Inc

Sample Receipt Checklist

Client Name **Hydrometrics Inc**

Date and Time Received: **5/23/2006 12:17:00 PM**

Work Order Number **H06050252**

Received by **rlt**

Login completed by: **Roxanne L. Tubbs**

5/23/2006 12:17:00

Reviewed by

Signature

Date

Initials

Date

Carrier name **Hand Del**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	9 °C
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Adjusted? _____ Checked by _____

Contact and Corrective Action Comments:

None

ANALYTICAL SUMMARY REPORT

July 13, 2006

Richard Lane

Hydrometrics Inc.

3020 Bozeman Ave.

Helena, MT 59601

Workorder No.: H06060234

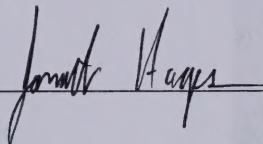
Project Name: 1273 City of Helena

Energy Laboratories Inc received the following 2 samples from Hydrometrics Inc. on 6/22/2006 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H06060234-001	CHHL-0606-100	06/22/06 11:45	06/22/06	Aqueous	8260-Volatile Organic Comp, 40 CFR Part 258 App I
H06060234-002	CHHL-0606-101	06/22/06 11:50	06/22/06	Aqueous	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By: 

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc.
Project: 1273 City of Helena
Lab ID: H06060234-001
Client Sample ID: CHHL-0606-100

Pond

Report Date: 07/13/06
Collection Date: 06/22/06 11:45
Date Received: 06/22/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	07/03/06 14:34 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	07/03/06 14:34 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	07/03/06 14:34 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	07/03/06 14:34 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	07/03/06 14:34 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Tetrachloroethene	0.26	ug/L	J	0.50		SW8260B	07/03/06 14:34 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc.
Project: 1273 City of Helena
Lab ID: H06060234-001
Client Sample ID: CHHL-0606-100

Report Date: 07/13/06
Collection Date: 06/22/06 11:45
DateReceived: 06/22/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	07/03/06 14:34 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	07/03/06 14:34 / eli-b
Surr: 1,2-Dichloroethane-d4	88.0	%REC			70-130	SW8260B	07/03/06 14:34 / eli-b
Surr: Dibromofluoromethane	96.0	%REC			77-126	SW8260B	07/03/06 14:34 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC			76-127	SW8260B	07/03/06 14:34 / eli-b
Surr: Toluene-d8	96.0	%REC			79-122	SW8260B	07/03/06 14:34 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc.
Project: 1273 City of Helena
Lab ID: H06060234-002
Client Sample ID: CHHL-0606-101

Sprinkler

Report Date: 07/13/06
Collection Date: 06/22/06 11:50
Date Received: 06/22/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	07/03/06 15:08 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	07/03/06 15:08 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	07/03/06 15:08 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	07/03/06 15:08 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	07/03/06 15:08 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	07/03/06 15:08 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	07/03/06 15:08 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	07/03/06 15:08 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	07/03/06 15:08 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	07/03/06 15:08 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Tetrachloroethene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	07/03/06 15:08 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc.
Project: 1273 City of Helena
Lab ID: H06060234-002
Client Sample ID: CHHL-0606-101

Report Date: 07/13/06
Collection Date: 06/22/06 11:50
DateReceived: 06/22/06
Matrix: Aqueous

[illegible]

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R78722		
Sample ID: Ics070306	Laboratory Control Sample			Run: SUB-B78722			07/03/06 10:23		
Acetone	60.8	ug/L	20	122	62	130			
Acrylonitrile	53.6	ug/L	20	107	60	130			
Benzene	4.72	ug/L	1.0	94	71	133			
Bromochloromethane	4.64	ug/L	1.0	93	68	131			
Bromodichloromethane	4.28	ug/L	1.0	86	67	138			
Bromoform	4.48	ug/L	1.0	90	64	136			
Bromomethane	3.97	ug/L	1.0	79	60	138			
Carbon disulfide	4.32	ug/L	1.0	86	46	146			
Carbon tetrachloride	4.48	ug/L	1.0	90	61	144			
Chlorobenzene	4.48	ug/L	1.0	90	78	136			
Chlorodibromomethane	4.60	ug/L	1.0	92	72	136			
Chloroethane	5.04	ug/L	1.0	101	64	136			
Chloroform	4.44	ug/L	1.0	89	69	133			
Chloromethane	5.20	ug/L	1.0	104	63	149			
1,2-Dibromo-3-chloropropane	4.84	ug/L	1.0	97	63	125			
1,2-Dibromoethane	4.68	ug/L	1.0	94	75	131			
Dibromomethane	4.48	ug/L	1.0	90	72	133			
1,2-Dichlorobenzene	4.68	ug/L	1.0	94	78	129			
1,4-Dichlorobenzene	4.36	ug/L	1.0	87	78	132			
trans-1,4-Dichloro-2-butene	4.32	ug/L	1.0	86	50	142			
Dichlorodifluoromethane	5.68	ug/L	1.0	114	55	141			
1,1-Dichloroethane	4.56	ug/L	1.0	91	72	130			
1,2-Dichloroethane	4.48	ug/L	1.0	90	57	146			
1,1-Dichloroethene	4.16	ug/L	1.0	83	66	142			
cis-1,2-Dichloroethene	4.40	ug/L	1.0	88	74	133			
trans-1,2-Dichloroethene	4.64	ug/L	1.0	93	76	138			
1,2-Dichloropropane	4.64	ug/L	1.0	93	72	135			
cis-1,3-Dichloropropene	4.64	ug/L	1.0	93	75	132			
trans-1,3-Dichloropropene	5.00	ug/L	1.0	100	77	145			
Ethylbenzene	4.48	ug/L	1.0	90	78	131			
2-Hexanone	52.0	ug/L	20	104	72	131			
Iodomethane	4.56	ug/L	1.0	91	66	132			
Methyl ethyl ketone	51.6	ug/L	20	103	55	145			
Methyl isobutyl ketone	47.6	ug/L	20	95	73	129			
Methylene chloride	4.68	ug/L	1.0	94	73	126			
Styrene	4.80	ug/L	1.0	96	76	134			
1,1,1,2-Tetrachloroethane	4.48	ug/L	1.0	90	75	135			
1,1,2,2-Tetrachloroethane	4.92	ug/L	1.0	98	72	132			
Tetrachloroethene	4.40	ug/L	1.0	88	78	137			
Toluene	4.56	ug/L	1.0	91	78	134			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R78722		
Sample ID: lcs070306	Laboratory Control Sample			Run: SUB-B78722			07/03/06 10:23		
1,1,1-Trichloroethane	4.24	ug/L	1.0	85	64	141			
1,1,2-Trichloroethane	4.48	ug/L	1.0	90	72	133			
Trichloroethene	4.40	ug/L	1.0	88	75	138			
Trichlorofluoromethane	4.68	ug/L	1.0	94	58	139			
1,2,3-Trichloropropane	4.24	ug/L	1.0	85	67	133			
Vinyl acetate	4.44	ug/L	1.0	89	42	120			
Vinyl chloride	5.04	ug/L	1.0	101	66	140			
m+p-Xylenes	9.08	ug/L	1.0	91	78	133			
o-Xylene	4.60	ug/L	1.0	92	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	96	70	130			
Surr: Dibromofluoromethane			1.0	98	77	126			
Surr: p-Bromofluorobenzene			1.0	93	76	127			
Surr: Toluene-d8			1.0	96	79	122			
Sample ID: mblk070306	Method Blank			Run: SUB-B78722			07/03/06 11:33		
Acetone	ND	ug/L	20						
Acrylonitrile	ND	ug/L	20						
Benzene	ND	ug/L	0.50						
Bromochloromethane	ND	ug/L	0.50						
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Bromomethane	ND	ug/L	0.50						
Carbon disulfide	ND	ug/L	1.0						
Carbon tetrachloride	ND	ug/L	0.50						
Chlorobenzene	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Chloromethane	ND	ug/L	1.0						
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0						
1,2-Dibromoethane	ND	ug/L	0.50						
Dibromomethane	ND	ug/L	0.50						
1,2-Dichlorobenzene	ND	ug/L	0.50						
1,4-Dichlorobenzene	ND	ug/L	0.50						
trans-1,4-Dichloro-2-butene	ND	ug/L	0.50						
Dichlorodifluoromethane	ND	ug/L	1.0						
1,1-Dichloroethane	ND	ug/L	0.50						
1,2-Dichloroethane	ND	ug/L	0.50						
1,1-Dichloroethene	ND	ug/L	0.50						
cis-1,2-Dichloroethene	ND	ug/L	0.50						
trans-1,2-Dichloroethene	ND	ug/L	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B					Batch: B_R78722				
Sample ID: mblk070306	Method Blank			Run: SUB-B78722			07/03/06 11:33		
1,2-Dichloropropane	ND	ug/L	0.50						
cis-1,3-Dichloropropene	ND	ug/L	0.50						
trans-1,3-Dichloropropene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
2-Hexanone	ND	ug/L	20						
Iodomethane	ND	ug/L	1.0						
Methyl ethyl ketone	ND	ug/L	20						
Methyl isobutyl ketone	ND	ug/L	20						
Methylene chloride	ND	ug/L	0.50						
Styrene	ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50						
Tetrachloroethene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
1,1,1-Trichloroethane	ND	ug/L	0.50						
1,1,2-Trichloroethane	ND	ug/L	0.50						
Trichloroethene	ND	ug/L	0.50						
Trichlorofluoromethane	ND	ug/L	0.50						
1,2,3-Trichloropropane	ND	ug/L	0.50						
Vinyl acetate	ND	ug/L	1.0						
Vinyl chloride	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				93	70	130			
Surr: Dibromofluoromethane			1.0	96	77	126			
Surr: p-Bromofluorobenzene			1.0	91	76	127			
Surr: Toluene-d8			1.0	95	79	122			
Sample ID: B06062472-001Ams					Run: SUB-B78722				
Sample Matrix Spike					07/03/06 19:17				
Acetone	58.0	ug/L	20	116	62	130	0.0	20	
Acrylonitrile	51.6	ug/L	20	103	60	130	0.0	20	
Benzene	5.08	ug/L	1.0	102	71	133	0.0	20	
Bromochloromethane	4.76	ug/L	1.0	95	68	131	0.0	20	
Bromodichloromethane	4.56	ug/L	1.0	91	67	138	0.0	20	
Bromoform	4.44	ug/L	1.0	89	64	136	0.0	20	
Bromomethane	3.72	ug/L	1.0	74	60	138	0.0	20	
Carbon disulfide	4.20	ug/L	1.0	84	46	146	0.0	20	
Carbon tetrachloride	4.60	ug/L	1.0	92	61	144	0.0	20	
Chlorobenzene	4.88	ug/L	1.0	98	78	136	0.0	20	
Chlorodibromomethane	4.76	ug/L	1.0	95	72	136	0.0	20	
Chloroethane	4.80	ug/L	1.0	96	64	136	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R78722		
Sample ID: B06062472-001Ams	Sample Matrix Spike			Run: SUB-B78722				07/03/06 19:17	
Chloroform	4.64	ug/L	1.0	93	69	133	0.0	20	
Chloromethane	3.94	ug/L	1.0	79	63	149	0.0	20	
1,2-Dibromo-3-chloropropane	4.84	ug/L	1.0	97	63	125	0.0	20	
1,2-Dibromoethane	4.96	ug/L	1.0	99	75	131	0.0	20	
Dibromomethane	4.84	ug/L	1.0	97	72	133	0.0	20	
1,2-Dichlorobenzene	4.96	ug/L	1.0	99	78	129	0.0	20	
1,4-Dichlorobenzene	4.80	ug/L	1.0	96	78	132	0.0	20	
trans-1,4-Dichloro-2-butene	4.48	ug/L	1.0	90	50	142	0.0	20	
Dichlorodifluoromethane	5.72	ug/L	1.0	114	55	141	0.0	20	
1,1-Dichloroethane	4.68	ug/L	1.0	94	72	130	0.0	20	
1,2-Dichloroethane	4.60	ug/L	1.0	92	57	146	0.0	20	
1,1-Dichloroethene	4.28	ug/L	1.0	86	66	142	0.0	20	
cis-1,2-Dichloroethene	4.68	ug/L	1.0	94	74	133	0.0	20	
trans-1,2-Dichloroethene	4.96	ug/L	1.0	99	76	138	0.0	20	
1,2-Dichloropropane	5.16	ug/L	1.0	103	72	135	0.0	20	
cis-1,3-Dichloropropene	4.92	ug/L	1.0	98	75	132	0.0	20	
trans-1,3-Dichloropropene	5.24	ug/L	1.0	105	77	145	0.0	20	
Ethylbenzene	4.96	ug/L	1.0	99	78	131	0.0	20	
2-Hexanone	53.6	ug/L	20	107	72	131	0.0	20	
Iodomethane	4.32	ug/L	1.0	86	66	132	0.0	20	
Methyl ethyl ketone	49.2	ug/L	20	98	55	145	0.0	20	
Methyl isobutyl ketone	47.2	ug/L	20	94	73	129	0.0	20	
Methylene chloride	4.28	ug/L	1.0	86	73	126	0.0	20	
Styrene	5.24	ug/L	1.0	105	76	134	0.0	20	
1,1,1,2-Tetrachloroethane	4.72	ug/L	1.0	94	75	135	0.0	20	
1,1,2,2-Tetrachloroethane	5.32	ug/L	1.0	106	72	132	0.0	20	
Tetrachloroethene	4.80	ug/L	1.0	96	78	137	0.0	20	
Toluene	5.12	ug/L	1.0	102	78	134	0.0	20	
1,1,1-Trichloroethane	4.48	ug/L	1.0	90	64	141	0.0	20	
1,1,2-Trichloroethane	5.08	ug/L	1.0	102	72	133	0.0	20	
Trichloroethene	4.88	ug/L	1.0	98	75	138	0.0	20	
Trichlorofluoromethane	4.72	ug/L	1.0	94	58	139	0.0	20	
1,2,3-Trichloropropane	4.32	ug/L	1.0	86	67	133	0.0	20	
Vinyl chloride	4.80	ug/L	1.0	96	66	140	0.0	20	
m+p-Xylenes	10.2	ug/L	1.0	102	78	133	0.0	20	
o-Xylene	5.08	ug/L	1.0	102	79	136	0.0	20	
Surr: 1,2-Dichloroethane-d4			1.0	90	70	130			
Surr: Dibromofluoromethane			1.0	94	77	126			
Surr: p-Bromofluorobenzene			1.0	95	76	127			
Surr: Toluene-d8			1.0	100	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: B_R78722
Sample ID: B06062472-001Amsd	Sample Matrix Spike Duplicate				Run: SUB-B78722				07/03/06 19:51
Acetone	55.6	ug/L	20	111	62	130	4.2	20	
Acrylonitrile	52.4	ug/L	20	105	60	130	1.5	20	
Benzene	4.80	ug/L	1.0	96	71	133	5.7	20	
Bromochloromethane	4.24	ug/L	1.0	85	68	131	12	20	
Bromodichloromethane	4.36	ug/L	1.0	87	67	138	4.5	20	
Bromoform	4.32	ug/L	1.0	86	64	136	2.7	20	
Bromomethane	4.60	ug/L	1.0	92	60	138	21	20	R
Carbon disulfide	4.28	ug/L	1.0	86	46	146	1.9	20	
Carbon tetrachloride	4.36	ug/L	1.0	87	61	144	5.4	20	
Chlorobenzene	4.60	ug/L	1.0	92	78	136	5.9	20	
Chlorodibromomethane	4.48	ug/L	1.0	90	72	136	6.1	20	
Chloroethane	5.16	ug/L	1.0	103	64	136	7.2	20	
Chloroform	4.44	ug/L	1.0	89	69	133	4.4	20	
Chloromethane	5.28	ug/L	1.0	106	63	149	29	20	R
1,2-Dibromo-3-chloropropane	4.60	ug/L	1.0	92	63	125	5.1	20	
1,2-Dibromoethane	4.76	ug/L	1.0	95	75	131	4.1	20	
Dibromomethane	4.72	ug/L	1.0	94	72	133	2.5	20	
1,2-Dichlorobenzene	4.84	ug/L	1.0	97	78	129	2.4	20	
1,4-Dichlorobenzene	4.64	ug/L	1.0	93	78	132	3.4	20	
trans-1,4-Dichloro-2-butene	4.48	ug/L	1.0	90	50	142	0.0	20	
Dichlorodifluoromethane	5.72	ug/L	1.0	114	55	141	0.0	20	
1,1-Dichloroethane	4.60	ug/L	1.0	92	72	130	1.7	20	
1,2-Dichloroethane	4.16	ug/L	1.0	83	57	146	10	20	
1,1-Dichloroethene	4.12	ug/L	1.0	82	66	142	3.8	20	
cis-1,2-Dichloroethene	4.48	ug/L	1.0	90	74	133	4.4	20	
trans-1,2-Dichloroethene	4.56	ug/L	1.0	91	76	138	8.4	20	
1,2-Dichloropropane	5.00	ug/L	1.0	100	72	135	3.1	20	
cis-1,3-Dichloropropene	4.68	ug/L	1.0	94	75	132	5.0	20	
trans-1,3-Dichloropropene	4.88	ug/L	1.0	98	77	145	7.1	20	
Ethylbenzene	4.72	ug/L	1.0	94	78	131	5.0	20	
2-Hexanone	51.2	ug/L	20	102	72	131	4.6	20	
Iodomethane	4.40	ug/L	1.0	88	66	132	1.8	20	
Methyl ethyl ketone	48.4	ug/L	20	97	55	145	1.6	20	
Methyl isobutyl ketone	44.4	ug/L	20	89	73	129	6.1	20	
Methylene chloride	4.16	ug/L	1.0	83	73	126	2.8	20	
Styrene	4.96	ug/L	1.0	99	76	134	5.5	20	
1,1,1,2-Tetrachloroethane	4.48	ug/L	1.0	90	75	135	5.2	20	
1,1,2,2-Tetrachloroethane	5.16	ug/L	1.0	103	72	132	3.1	20	
Tetrachloroethene	4.56	ug/L	1.0	91	78	137	5.1	20	
Toluene	4.96	ug/L	1.0	99	78	134	3.2	20	

Qualifiers:

RL - Analyte reporting limit.

R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc.
Project: 1273 City of Helena

Report Date: 07/13/06
Work Order: H06060234

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R78722		
Sample ID: B06062472-001Amsd	Sample Matrix Spike Duplicate				Run: SUB-B78722			07/03/06 19:51	
1,1,1-Trichloroethane	4.24	ug/L	1.0	85	64	141	5.5	20	
1,1,2-Trichloroethane	4.72	ug/L	1.0	94	72	133	7.3	20	
Trichloroethene	4.60	ug/L	1.0	92	75	138	5.9	20	
Trichlorofluoromethane	4.80	ug/L	1.0	96	58	139	1.7	20	
1,2,3-Trichloropropane	4.28	ug/L	1.0	86	67	133	0.9	20	
Vinyl chloride	5.00	ug/L	1.0	100	66	140	4.1	20	
m+p-Xylenes	9.68	ug/L	1.0	97	78	133	5.2	20	
o-Xylene	4.56	ug/L	1.0	91	79	136	11	20	
Surr: 1,2-Dichloroethane-d4			1.0	89	70	130			
Surr: Dibromofluoromethane			1.0	93	77	126			
Surr: p-Bromofluorobenzene			1.0	95	76	127			
Surr: Toluene-d8			1.0	96	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

[illegible]



Energy Laboratories Inc

Sample Receipt Checklist

Client Name **Hydrometrics Inc**

Date and Time Received: **6/22/2006 12:36:00 PM**

Work Order Number **H06060234**

Received by **rlt**

Login completed by: **Roxanne L. Tubbs**

6/22/2006 12:36:00

Reviewed by

HTH
Initials

6/22/06
Date

Signature

Date

Initials

Date

Carrier name **Hand Del**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	14 °C From Field
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Adjusted? _____ Checked by _____

Contact and Corrective Action Comments:

None

ANALYTICAL SUMMARY REPORT

August 15, 2006

Richard Lane

Hydrometrics, Inc.

3020 Bozeman Ave.

Helena, MT 59601

Workorder No.: H06070299

Project Name: 1273 City of Helena

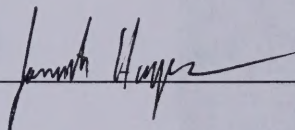
Energy Laboratories Inc received the following 4 samples from Hydrometrics, Inc. on 7/28/2006 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H06070299-001	CHHL-0607-100	07/27/06 12:15	07/28/06	Aqueous	8260-Volatile Organic Comp, 40 CFR Part 258 App I
H06070299-002	CHHL-0607-101	07/27/06 12:20	07/28/06	Aqueous	Same As Above
H06070299-003	YMCA Stack Gas	07/27/06 10:00	07/28/06	Air	Same As Above
H06070299-004	CC Stack Gas	07/27/06 14:30	07/28/06	Air	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By: _____



LABORATORY ANALYTICAL REPORT

Client: Hydrometrics, Inc.
 Project: 1273 City of Helena
 Lab ID: H06070299-001
 Client Sample ID: CHHL-0607-100

Pond

Report Date: 08/15/06
 Collection Date: 07/27/06 12:15
 Date Received: 07/28/06
 Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	08/09/06 14:00 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	08/09/06 14:00 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chloroform	4.1	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	08/09/06 14:00 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	08/09/06 14:00 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	08/09/06 14:00 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Tetrachloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics, Inc.
Project: 1273 City of Helena
Lab ID: H06070299-001
Client Sample ID: CHHL-0607-100

Report Date: 08/15/06
Collection Date: 07/27/06 12:15
DateReceived: 07/28/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Surr: 1,2-Dichloroethane-d4	105	%REC			70-130	SW8260B	08/09/06 14:00 / eli-b
Surr: Dibromofluoromethane	102	%REC			77-126	SW8260B	08/09/06 14:00 / eli-b
Surr: p-Bromofluorobenzene	102	%REC			76-127	SW8260B	08/09/06 14:00 / eli-b
Surr: Toluene-d8	93.0	%REC			79-122	SW8260B	08/09/06 14:00 / eli-b
Fluorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
Bromobenzene	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
1,2-Dichlorobenzene	ND	ug/L		1.0		SW8260B	08/09/06 14:00 / eli-b
1,3-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromochlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromochlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromochlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromodichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromodichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromodichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromofluorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromofluorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromofluorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromotoluene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromotoluene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromotoluene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromonitrobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromonitrobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromonitrobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromophenol	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromophenol	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromophenol	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromobenzenesulfonamide	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromobenzenesulfonamide	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromobenzenesulfonamide	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,3-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,4-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:00 / eli-b
1,2-Dibromobenzene	ND	ug/L		0.50		SW8260B	08/09/06

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics, Inc.
Project: 1273 City of Helena
Lab ID: H06070299-002
Client Sample ID: CHHL-0607-101

Sprinkler

Report Date: 08/15/06
Collection Date: 07/27/06 12:20
Date Received: 07/28/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	08/09/06 14:35 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	08/09/06 14:35 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	08/09/06 14:35 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	08/09/06 14:35 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	08/09/06 14:35 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Tetrachloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics, Inc.
Project: 1273 City of Helena
Lab ID: H06070299-002
Client Sample ID: CHHL-0607-101

Report Date: 08/15/06
Collection Date: 07/27/06 12:20
DateReceived: 07/28/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	08/09/06 14:35 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	08/09/06 14:35 / eli-b
Surr: 1,2-Dichloroethane-d4	110	%REC			70-130	SW8260B	08/09/06 14:35 / eli-b
Surr: Dibromofluoromethane	104	%REC			77-126	SW8260B	08/09/06 14:35 / eli-b
Surr: p-Bromofluorobenzene	100	%REC			76-127	SW8260B	08/09/06 14:35 / eli-b
Surr: Toluene-d8	92.0	%REC			79-122	SW8260B	08/09/06 14:35 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80290		
Sample ID: LCS	Laboratory Control Sample			Run: SUB-B80290			08/09/06 11:43		
Acetone	46.4	ug/L	20	93	62	130			
Benzene	5.60	ug/L	1.0	112	71	133			
Bromochloromethane	5.00	ug/L	1.0	100	68	131			
Bromodichloromethane	4.96	ug/L	1.0	99	67	138			
Bromoform	5.00	ug/L	1.0	100	64	136			
Bromomethane	4.76	ug/L	1.0	95	60	138			
Carbon tetrachloride	6.04	ug/L	1.0	121	61	144			
Chlorobenzene	5.00	ug/L	1.0	100	78	136			
Chlorodibromomethane	4.96	ug/L	1.0	99	72	136			
Chloroethane	5.80	ug/L	1.0	116	64	136			
Chloroform	5.36	ug/L	1.0	107	69	133			
Chloromethane	5.36	ug/L	1.0	107	63	149			
1,2-Dibromo-3-chloropropane	4.52	ug/L	1.0	90	63	125			
1,2-Dibromoethane	4.96	ug/L	1.0	99	75	131			
Dibromomethane	5.24	ug/L	1.0	105	72	133			
1,2-Dichlorobenzene	5.44	ug/L	1.0	109	78	129			
1,4-Dichlorobenzene	5.12	ug/L	1.0	102	78	131			
Dichlorodifluoromethane	5.04	ug/L	1.0	101	55	141			
1,1-Dichloroethane	5.56	ug/L	1.0	111	72	130			
1,2-Dichloroethane	5.52	ug/L	1.0	110	57	146			
1,1-Dichloroethene	5.36	ug/L	1.0	107	66	142			
cis-1,2-Dichloroethene	5.20	ug/L	1.0	104	74	133			
trans-1,2-Dichloroethene	5.36	ug/L	1.0	107	76	138			
1,2-Dichloropropane	5.44	ug/L	1.0	109	72	135			
cis-1,3-Dichloropropene	5.20	ug/L	1.0	104	75	132			
trans-1,3-Dichloropropene	5.84	ug/L	1.0	117	77	145			
Ethylbenzene	5.68	ug/L	1.0	114	78	131			
2-Hexanone	56.8	ug/L	20	114	72	131			
Methyl ethyl ketone	54.8	ug/L	20	110	55	145			
Methyl isobutyl ketone	59.6	ug/L	20	119	73	129			
Methylene chloride	6.24	ug/L	1.0	125	73	126			
Styrene	5.68	ug/L	1.0	114	76	134			
1,1,1,2-Tetrachloroethane	4.92	ug/L	1.0	98	75	135			
1,1,2,2-Tetrachloroethane	5.28	ug/L	1.0	106	72	132			
Tetrachloroethene	5.16	ug/L	1.0	103	78	137			
Toluene	5.60	ug/L	1.0	112	78	134			
1,1,1-Trichloroethane	5.32	ug/L	1.0	106	64	141			
1,1,2-Trichloroethane	5.08	ug/L	1.0	102	72	133			
Trichloroethene	5.28	ug/L	1.0	106	75	138			
Trichlorofluoromethane	5.36	ug/L	1.0	107	58	139			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80290		
Sample ID: LCS	Laboratory Control Sample			Run: SUB-B80290			08/09/06 11:43		
1,2,3-Trichloropropane	4.64	ug/L	1.0	93	67	133			
Vinyl chloride	4.92	ug/L	1.0	98	66	140			
m+p-Xylenes	11.1	ug/L	1.0	111	78	133			
o-Xylene	5.64	ug/L	1.0	113	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	107	70	130			
Surr: Dibromofluoromethane			1.0	102	77	126			
Surr: p-Bromofluorobenzene			1.0	103	76	127			
Surr: Toluene-d8			1.0	101	79	122			
Sample ID: LCSLONG	Laboratory Control Sample			Run: SUB-B80290			08/09/06 12:52		
trans-1,4-Dichloro-2-butene	6.04	ug/L	1.0	121	50	142			
Acrylonitrile	54.4	ug/L	20	109	60	130			
Carbon disulfide	5.12	ug/L	1.0	102	46	145			
Iodomethane	4.24	ug/L	1.0	85	66	132			
Vinyl acetate	4.12	ug/L	1.0	82	31	124			
Surr: 1,2-Dichloroethane-d4			1.0	106	70	130			
Surr: Dibromofluoromethane			1.0	102	77	126			
Surr: p-Bromofluorobenzene			1.0	110	76	127			
Surr: Toluene-d8			1.0	92	79	122			
Sample ID: BLANK	Method Blank			Run: SUB-B80290			08/09/06 13:26		
trans-1,4-Dichloro-2-butene	ND	ug/L	0.50						
Acetone	ND	ug/L	10						
Acrylonitrile	ND	ug/L	10						
Benzene	ND	ug/L	0.50						
Bromochloromethane	ND	ug/L	0.50						
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Bromomethane	ND	ug/L	0.50						
Carbon disulfide	ND	ug/L	0.50						
Carbon tetrachloride	ND	ug/L	0.50						
Chlorobenzene	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Chloromethane	ND	ug/L	0.50						
1,2-Dibromo-3-chloropropane	ND	ug/L	0.50						
1,2-Dibromoethane	ND	ug/L	0.50						
Dibromomethane	ND	ug/L	0.50						
1,2-Dichlorobenzene	ND	ug/L	0.50						
1,4-Dichlorobenzene	ND	ug/L	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80290		
Sample ID: BLANK	Method Blank		Run: SUB-B80290				08/09/06 13:26		
Dichlorodifluoromethane	ND	ug/L	0.50						
1,1-Dichloroethane	ND	ug/L	0.50						
1,2-Dichloroethane	ND	ug/L	0.50						
1,1-Dichloroethene	ND	ug/L	0.50						
cis-1,2-Dichloroethene	ND	ug/L	0.50						
trans-1,2-Dichloroethene	ND	ug/L	0.50						
1,2-Dichloropropane	ND	ug/L	0.50						
cis-1,3-Dichloropropene	ND	ug/L	0.50						
trans-1,3-Dichloropropene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
2-Hexanone	ND	ug/L	10						
Iodomethane	ND	ug/L	0.50						
Methyl ethyl ketone	ND	ug/L	10						
Methyl isobutyl ketone	ND	ug/L	10						
Methylene chloride	ND	ug/L	0.50						
Styrene	ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50						
Tetrachloroethene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
1,1,1-Trichloroethane	ND	ug/L	0.50						
1,1,2-Trichloroethane	ND	ug/L	0.50						
Trichloroethene	ND	ug/L	0.50						
Trichlorofluoromethane	ND	ug/L	0.50						
1,2,3-Trichloropropane	ND	ug/L	0.50						
Vinyl acetate	ND	ug/L	0.50						
Vinyl chloride	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	102	70	130			
Surr: Dibromofluoromethane			0.50	96	77	126			
Surr: p-Bromofluorobenzene			0.50	104	76	127			
Surr: Toluene-d8			0.50	94	79	122			
Sample ID: B06080534-006AMS	Sample Matrix Spike		Run: SUB-B80290				08/10/06 14:33		
trans-1,4-Dichloro-2-butene	69.6	ug/L	10	139	50	142			
Acetone	436	ug/L	200	87	62	130			
Acrylonitrile	520	ug/L	200	104	60	130			
Benzene	54.0	ug/L	10	108	71	133			
Bromochloromethane	47.6	ug/L	10	95	68	131			
Bromodichloromethane	48.0	ug/L	10	96	67	138			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80290		
Sample ID: B06080534-006AMS	Sample Matrix Spike			Run: SUB-B80290			08/10/06 14:33		
Bromoform	44.4	ug/L	10	89	64	136			
Bromomethane	37.0	ug/L	10	74	60	138			
Carbon disulfide	48.0	ug/L	10	96	46	145			
Carbon tetrachloride	54.0	ug/L	10	108	61	144			
Chlorobenzene	47.6	ug/L	10	95	78	136			
Chlorodibromomethane	46.0	ug/L	10	92	72	136			
Chloroethane	33.3	ug/L	10	67	64	136			
Chloroform	49.6	ug/L	10	99	69	133			
Chloromethane	56.4	ug/L	10	113	63	149			
1,2-Dibromo-3-chloropropane	49.2	ug/L	10	98	63	125			
1,2-Dibromoethane	48.8	ug/L	10	98	75	131			
Dibromomethane	49.2	ug/L	10	98	72	133			
1,2-Dichlorobenzene	53.6	ug/L	10	107	78	129			
1,4-Dichlorobenzene	49.6	ug/L	10	99	78	131			
Dichlorodifluoromethane	45.2	ug/L	10	90	55	141			
1,1-Dichloroethane	51.2	ug/L	10	102	72	130			
1,2-Dichloroethane	50.4	ug/L	10	101	57	146			
1,1-Dichloroethene	49.2	ug/L	10	98	66	142			
cis-1,2-Dichloroethene	56.4	ug/L	10	113	74	133			
trans-1,2-Dichloroethene	50.0	ug/L	10	100	76	138			
1,2-Dichloropropane	53.6	ug/L	10	107	72	135			
cis-1,3-Dichloropropene	44.4	ug/L	10	89	75	132			
trans-1,3-Dichloropropene	56.0	ug/L	10	112	77	145			
Ethylbenzene	54.4	ug/L	10	109	78	131			
2-Hexanone	580	ug/L	200	116	72	131			
Iodomethane	42.4	ug/L	10	85	66	132			
Methyl ethyl ketone	536	ug/L	200	107	55	145			
Methyl isobutyl ketone	588	ug/L	200	118	73	129			
Methylene chloride	57.6	ug/L	10	115	73	126			
Styrene	54.4	ug/L	10	109	76	134			
1,1,1,2-Tetrachloroethane	46.0	ug/L	10	92	75	135			
1,1,2,2-Tetrachloroethane	49.6	ug/L	10	99	72	132			
Tetrachloroethene	71.6	ug/L	10	108	78	137			
Toluene	54.8	ug/L	10	110	78	134			
1,1,1-Trichloroethane	48.4	ug/L	10	97	64	141			
1,1,2-Trichloroethane	50.0	ug/L	10	100	72	133			
Trichloroethene	58.8	ug/L	10	118	75	138			
Trichlorofluoromethane	44.0	ug/L	10	88	58	139			
1,2,3-Trichloropropane	43.2	ug/L	10	86	67	133			
Vinyl acetate	48.4	ug/L	10	97	31	124			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: B_R80290
Sample ID: B06080534-006AMS	Sample Matrix Spike		Run: SUB-B80290					08/10/06 14:33	
Vinyl chloride	44.8	ug/L	10	90	66	140			
m+p-Xylenes	106	ug/L	10	106	78	133			
o-Xylene	53.6	ug/L	10	107	79	136			
Surr: 1,2-Dichloroethane-d4			10	101	70	130			
Surr: Dibromofluoromethane			10	97	77	126			
Surr: p-Bromofluorobenzene			10	99	76	127			
Surr: Toluene-d8			10	100	79	122			
Sample ID: B06080534-006AMSD	Sample Matrix Spike Duplicate		Run: SUB-B80290					08/10/06 15:07	
trans-1,4-Dichloro-2-butene	72.8	ug/L	10	146	50	142	4.5	20	S
Acetone	416	ug/L	200	83	62	130	4.7	20	
Acrylonitrile	512	ug/L	200	102	60	130	1.6	20	
Benzene	52.4	ug/L	10	105	71	133	3.0	20	
Bromochloromethane	45.6	ug/L	10	91	68	131	4.3	20	
Bromodichloromethane	46.8	ug/L	10	94	67	138	2.5	20	
Bromoform	47.2	ug/L	10	94	64	136	6.1	20	
Bromomethane	54.0	ug/L	10	108	60	138	37	20	R
Carbon disulfide	45.2	ug/L	10	90	46	145	6.0	20	
Carbon tetrachloride	53.6	ug/L	10	107	61	144	0.7	20	
Chlorobenzene	46.4	ug/L	10	93	78	136	2.6	20	
Chlorodibromomethane	44.4	ug/L	10	89	72	136	3.5	20	
Chloroethane	50.4	ug/L	10	101	64	136	41	20	R
Chloroform	48.4	ug/L	10	97	69	133	2.4	20	
Chloromethane	56.8	ug/L	10	114	63	149	0.7	20	
1,2-Dibromo-3-chloropropane	48.0	ug/L	10	96	63	125	2.5	20	
1,2-Dibromoethane	47.6	ug/L	10	95	75	131	2.5	20	
Dibromomethane	48.4	ug/L	10	97	72	133	1.6	20	
1,2-Dichlorobenzene	52.8	ug/L	10	106	78	129	1.5	20	
1,4-Dichlorobenzene	49.2	ug/L	10	98	78	131	0.8	20	
Dichlorodifluoromethane	47.6	ug/L	10	95	55	141	5.2	20	
1,1-Dichloroethane	50.0	ug/L	10	100	72	130	2.4	20	
1,2-Dichloroethane	49.2	ug/L	10	98	57	146	2.4	20	
1,1-Dichloroethene	44.0	ug/L	10	88	66	142	11	20	
cis-1,2-Dichloroethene	55.2	ug/L	10	110	74	133	2.2	20	
trans-1,2-Dichloroethene	49.2	ug/L	10	98	76	138	1.6	20	
1,2-Dichloropropane	52.8	ug/L	10	106	72	135	1.5	20	
cis-1,3-Dichloropropene	44.0	ug/L	10	88	75	132	0.9	20	
trans-1,3-Dichloropropene	55.2	ug/L	10	110	77	145	1.4	20	
Ethylbenzene	52.8	ug/L	10	106	78	131	3.0	20	
2-Hexanone	592	ug/L	200	118	72	131	2.0	20	
Iodomethane	44.0	ug/L	10	88	66	132	3.7	20	

Qualifiers:

RL - Analyte reporting limit.
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

[illegible]

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80484		
Sample ID: BLKAIR	Method Blank		Run: SUB-B80484				08/07/06 14:48		
Acetone	ND	mg/m3	10						
Acrylonitrile	ND	mg/m3	10						
Benzene	ND	mg/m3	0.50						
Bromochloromethane	ND	mg/m3	0.50						
Bromodichloromethane	ND	mg/m3	0.50						
Bromoform	ND	mg/m3	0.50						
Bromomethane	ND	mg/m3	0.50						
Carbon disulfide	ND	mg/m3	0.50						
Carbon tetrachloride	ND	mg/m3	0.50						
Chlorobenzene	ND	mg/m3	0.50						
Chlorodibromomethane	ND	mg/m3	0.50						
Chloroethane	ND	mg/m3	0.50						
Chloroform	ND	mg/m3	0.50						
Chloromethane	ND	mg/m3	0.50						
1,2-Dibromo-3-chloropropane	ND	mg/m3	0.50						
1,2-Dibromoethane	ND	mg/m3	0.50						
Dibromomethane	ND	mg/m3	0.50						
1,2-Dichlorobenzene	ND	mg/m3	0.50						
1,4-Dichlorobenzene	ND	mg/m3	0.50						
trans-1,4-Dichloro-2-butene	ND	mg/m3	0.50						
Dichlorodifluoromethane	ND	mg/m3	0.50						
1,1-Dichloroethane	ND	mg/m3	0.50						
1,2-Dichloroethane	ND	mg/m3	0.50						
1,1-Dichloroethene	ND	mg/m3	0.50						
cis-1,2-Dichloroethene	ND	mg/m3	0.50						
trans-1,2-Dichloroethene	ND	mg/m3	0.50						
1,2-Dichloropropane	ND	mg/m3	0.50						
cis-1,3-Dichloropropene	ND	mg/m3	0.50						
trans-1,3-Dichloropropene	ND	mg/m3	0.50						
Ethylbenzene	ND	mg/m3	0.50						
2-Hexanone	ND	mg/m3	10						
Iodomethane	ND	mg/m3	0.50						
Methyl ethyl ketone	ND	mg/m3	10						
Methyl isobutyl ketone	ND	mg/m3	10						
Methylene chloride	ND	mg/m3	0.50						
Styrene	ND	mg/m3	0.50						
1,1,1,2-Tetrachloroethane	ND	mg/m3	0.50						
1,1,2,2-Tetrachloroethane	ND	mg/m3	0.50						
Tetrachloroethene	ND	mg/m3	0.50						
Toluene	ND	mg/m3	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80484		
Sample ID: BLKAIR	Method Blank					Run: SUB-B80484			08/07/06 14:48
1,1,1-Trichloroethane	ND	mg/m3	0.50						
1,1,2-Trichloroethane	ND	mg/m3	0.50						
Trichloroethene	ND	mg/m3	0.50						
Trichlorofluoromethane	ND	mg/m3	0.50						
1,2,3-Trichloropropane	ND	mg/m3	0.50						
Vinyl acetate	ND	mg/m3	0.50						
Vinyl chloride	ND	mg/m3	0.50						
m+p-Xylenes	ND	mg/m3	0.50						
o-Xylene	ND	mg/m3	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	99	70	130			
Surr: Dibromofluoromethane			0.50	94	77	126			
Surr: p-Bromofluorobenzene			0.50	94	76	127			
Surr: Toluene-d8			0.50	91	79	122			
Sample ID: LCSAIR							Laboratory Control Sample		
							Run: SUB-B80484		
Acetone	43.2	mg/m3	10	86	62	130			
Acrylonitrile	54.0	mg/m3	10	108	60	130			
Benzene	6.48	mg/m3	0.50	130	71	133			
Bromochloromethane	3.80	mg/m3	0.50	76	68	131			
Bromodichloromethane	6.16	mg/m3	0.50	123	67	138			
Bromoform	6.44	mg/m3	0.50	129	64	136			
Bromomethane	5.52	mg/m3	0.50	110	60	138			
Carbon disulfide	6.28	mg/m3	0.50	126	46	146			
Carbon tetrachloride	5.96	mg/m3	0.50	119	61	144			
Chlorobenzene	7.04	mg/m3	0.50	141	78	136			S
Chlorodibromomethane	4.88	mg/m3	0.50	98	72	136			
Chloroethane	5.40	mg/m3	0.50	108	64	136			
Chloroform	6.80	mg/m3	0.50	136	69	133			S
Chloromethane	5.56	mg/m3	0.50	111	63	149			
1,2-Dibromo-3-chloropropane	5.52	mg/m3	0.50	110	63	125			
1,2-Dibromoethane	6.36	mg/m3	0.50	127	75	131			
Dibromomethane	6.68	mg/m3	0.50	134	72	133			S
1,2-Dichlorobenzene	6.40	mg/m3	0.50	128	78	129			
1,4-Dichlorobenzene	6.24	mg/m3	0.50	125	78	132			
trans-1,4-Dichloro-2-butene	7.32	mg/m3	0.50	146	50	142			S
Dichlorodifluoromethane	5.36	mg/m3	0.50	107	55	141			
1,1-Dichloroethane	6.60	mg/m3	0.50	132	72	130			S
1,2-Dichloroethane	5.96	mg/m3	0.50	119	57	146			
1,1-Dichloroethene	6.24	mg/m3	0.50	125	66	142			
cis-1,2-Dichloroethene	6.16	mg/m3	0.50	123	74	133			
trans-1,2-Dichloroethene	6.60	mg/m3	0.50	132	76	138			

Qualifiers:

RL - Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics, Inc.
Project: 1273 City of Helena

Report Date: 08/15/06
Work Order: H06070299

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R80484		
Sample ID: LCSAIR	Laboratory Control Sample			Run: SUB-B80484			08/07/06 15:56		
1,2-Dichloropropane	6.24	mg/m3	0.50	125	72	135			
cis-1,3-Dichloropropene	6.56	mg/m3	0.50	131	75	132			
trans-1,3-Dichloropropene	6.80	mg/m3	0.50	136	77	145			
Ethylbenzene	6.44	mg/m3	0.50	129	78	131			
2-Hexanone	47.2	mg/m3	10	94	72	131			
Iodomethane	6.00	mg/m3	0.50	120	66	132			
Methyl ethyl ketone	48.4	mg/m3	10	97	55	145			
Methyl isobutyl ketone	52.8	mg/m3	10	106	73	129			
Methylene chloride	6.12	mg/m3	0.50	122	73	126			
Styrene	6.64	mg/m3	0.50	133	76	134			
1,1,1,2-Tetrachloroethane	6.20	mg/m3	0.50	124	75	135			
1,1,2,2-Tetrachloroethane	5.84	mg/m3	0.50	117	72	132			
Tetrachloroethene	7.40	mg/m3	0.50	148	78	137			S
Toluene	6.16	mg/m3	0.50	123	78	134			
1,1,1-Trichloroethane	6.68	mg/m3	0.50	134	64	141			
1,1,2-Trichloroethane	6.36	mg/m3	0.50	127	72	133			
Trichloroethene	6.12	mg/m3	0.50	122	75	138			
Trichlorofluoromethane	5.64	mg/m3	0.50	113	58	139			
1,2,3-Trichloropropane	4.28	mg/m3	0.50	86	67	133			
Vinyl acetate	5.76	mg/m3	0.50	115	42	120			
Vinyl chloride	5.20	mg/m3	0.50	104	66	140			
m+p-Xylenes	12.2	mg/m3	0.50	122	78	133			
o-Xylene	6.32	mg/m3	0.50	126	79	136			
Surr: 1,2-Dichloroethane-d4			0.50	80	70	130			
Surr: Dibromofluoromethane			0.50	96	77	126			
Surr: p-Bromofluorobenzene			0.50	93	76	127			
Surr: Toluene-d8			0.50	100	79	122			

Qualifiers:

RL - Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.



Hydrometrics, Inc.

CHAIN OF CUSTODY RECORD

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO. 1273		PROJECT NAME City of Helena		NO. OF CON- TAINERS	Commons UF/RAW Nutrients UF/H₂SO₄ Diss. Metal F/HNO₃ CN UF/NaOH Total Metals UF/HNO₃ Total Recoverable Metals UF/HNO₃ BTEX TPH 8260 Longlist * 8260 APP II														REMARKS
SAMPLERS: (Signature) <i>Rich</i>					DATE	TIME	COMP	GRAB	SAMPLE NUMBER										
7/27/06	10:00		X	1													X	H06070299-003* COF	
	14:30			1													X		
	12:15			2													X	H06070299-001* .0005mg/L CO2 Detection	
✓	12:20		✓	2													X		
Collection date & Limit Sample ID taken from Sample container <i>RT</i> Same As Historically																			

Relinquished (Signature) <i>Rich</i>	Date/Time 7/28/06 13:37	Received by: (Signature) <i>Jim daBrock</i>	Lab Energy Lab	P.O. # HLN 091286	Shipped via: Bus, Fed Ex, UPS Other <u>hand deliver</u> Air Bill #
Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks temp 4°		
Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other _____	



Energy Laboratories Inc

Sample Receipt Checklist

Client Name **Hydrometrics Inc**

Date and Time Received: **7/28/2006 1:37:00 PM**

Work Order Number **H06070299**

Received by **abb**

Login completed by: **Roxanne L. Tubbs**

7/28/2006 1:37:00

Reviewed by

Signature

Date

Initials

Date

Carrier name **Hand Del**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☒	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	4 °C
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Adjusted? _____ Checked by _____

Contact and Corrective Action Comments:

Collection time and sample ID for Sample 001 and 002 taken from sample bottles. RT 7/28/06

ANALYTICAL SUMMARY REPORT

September 11, 2006

Hydrometrics Inc
3020 Bozeman Ave.
Helena, MT 59601

Workorder No.: H06080276

Project Name: 1273 City of Helena SW Sampling GW Extractions

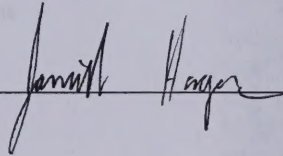
Energy Laboratories Inc received the following 2 samples from Hydrometrics Inc on 8/28/2006 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H06080276-001	CHHL-0608-100	08/28/06 13:15	08/28/06	Aqueous	8260-Volatile Organic Comp, 40 CFR Part 258 App I
H06080276-002	CHHL-0608-101	08/28/06 13:30	08/28/06	Aqueous	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By: _____



LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena SW Sampling GW Extractions
Lab ID: H06080276-001
Client Sample ID: CHHL-0608-100

Report Date: 09/11/06
Collection Date: 08/28/06 13:15
Date Received: 08/28/06
Matrix: Aqueous

Pond

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	09/05/06 15:57 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	09/05/06 15:57 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Chloroform	1.5	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	09/05/06 15:57 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	09/05/06 15:57 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	09/05/06 15:57 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Tetrachloroethene	0.33	ug/L	J	0.50		SW8260B	09/05/06 15:57 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena SW Sampling GW Extractions
Lab ID: H06080276-001
Client Sample ID: CHHL-0608-100

Report Date: 09/11/06
Collection Date: 08/28/06 13:15
DateReceived: 08/28/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	09/05/06 15:57 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
Surr: 1,2-Dichloroethane-d4	113	%REC			70-130	SW8260B	09/05/06 15:57 / eli-b
Surr: Dibromofluoromethane	115	%REC			77-126	SW8260B	09/05/06 15:57 / eli-b
Surr: p-Bromofluorobenzene	110	%REC			76-127	SW8260B	09/05/06 15:57 / eli-b
Surr: Toluene-d8	113	%REC			79-122	SW8260B	09/05/06 15:57 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromofluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dichlorodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,1-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromochloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromodifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dichlorotrifluoroethene	ND	ug/L		0.50		SW8260B	09/05/06 15:57 / eli-b
1,2-Dibromoethene	ND	ug/L		0.50			

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena SW Sampling GW Extractions
Lab ID: H06080276-002
Client Sample ID: CHHL-0608-101

Report Date: 09/11/06
Collection Date: 08/28/06 13:30
Date Received: 08/28/06
Matrix: Aqueous

Sprinkler

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	09/05/06 16:25 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	09/05/06 16:25 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	09/05/06 16:25 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	09/05/06 16:25 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	09/05/06 16:25 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Tetrachloroethene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc
Project: 1273 City of Helena SW Sampling GW Extractions
Lab ID: H06080276-002
Client Sample ID: CHHL-0608-101

Report Date: 09/11/06
Collection Date: 08/28/06 13:30
DateReceived: 08/28/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	09/05/06 16:25 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	09/05/06 16:25 / eli-b
Surr: 1,2-Dichloroethane-d4	112	%REC			70-130	SW8260B	09/05/06 16:25 / eli-b
Surr: Dibromofluoromethane	113	%REC			77-126	SW8260B	09/05/06 16:25 / eli-b
Surr: p-Bromofluorobenzene	110	%REC			76-127	SW8260B	09/05/06 16:25 / eli-b
Surr: Toluene-d8	113	%REC			79-122	SW8260B	09/05/06 16:25 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R81665		
Sample ID: Ics090506	Laboratory Control Sample				Run: SUB-B81665		09/05/06 12:57		
trans-1,4-Dichloro-2-butene	5.52	ug/L	1.0	110	50	142			
Acetone	41.6	ug/L	20	83	62	130			
Acrylonitrile	46.8	ug/L	20	94	60	130			
Benzene	4.68	ug/L	1.0	94	71	133			
Bromochloromethane	4.48	ug/L	1.0	90	68	131			
Bromodichloromethane	4.36	ug/L	1.0	87	67	138			
Bromoform	4.56	ug/L	1.0	91	64	136			
Bromomethane	5.04	ug/L	1.0	101	60	138			
Carbon disulfide	4.16	ug/L	1.0	83	46	145			
Carbon tetrachloride	4.64	ug/L	1.0	93	61	144			
Chlorobenzene	4.80	ug/L	1.0	96	78	136			
Chlorodibromomethane	4.60	ug/L	1.0	92	72	136			
Chloroethane	4.84	ug/L	1.0	97	64	136			
Chloroform	4.60	ug/L	1.0	92	69	133			
Chloromethane	5.04	ug/L	1.0	101	63	149			
1,2-Dibromo-3-chloropropane	4.40	ug/L	1.0	88	63	125			
1,2-Dibromoethane	4.64	ug/L	1.0	93	75	131			
Dibromomethane	4.60	ug/L	1.0	92	72	133			
1,2-Dichlorobenzene	4.72	ug/L	1.0	94	78	129			
1,4-Dichlorobenzene	4.72	ug/L	1.0	94	78	131			
Dichlorodifluoromethane	4.92	ug/L	1.0	98	55	141			
1,1-Dichloroethane	4.60	ug/L	1.0	92	72	130			
1,2-Dichloroethane	4.68	ug/L	1.0	94	57	146			
1,1-Dichloroethene	4.56	ug/L	1.0	91	66	142			
cis-1,2-Dichloroethene	4.64	ug/L	1.0	93	74	133			
trans-1,2-Dichloroethene	4.76	ug/L	1.0	95	76	138			
1,2-Dichloropropane	4.68	ug/L	1.0	94	72	135			
cis-1,3-Dichloropropene	4.80	ug/L	1.0	96	75	132			
trans-1,3-Dichloropropene	5.24	ug/L	1.0	105	77	145			
Ethylbenzene	4.64	ug/L	1.0	93	78	131			
2-Hexanone	47.2	ug/L	20	94	72	131			
Iodomethane	5.28	ug/L	1.0	106	66	132			
Methyl ethyl ketone	46.4	ug/L	20	93	55	145			
Methyl isobutyl ketone	47.6	ug/L	20	95	73	129			
Methylene chloride	4.40	ug/L	1.0	88	73	126			
Styrene	4.68	ug/L	1.0	94	76	134			
1,1,1,2-Tetrachloroethane	4.64	ug/L	1.0	93	75	135			
1,1,2,2-Tetrachloroethane	4.64	ug/L	1.0	93	72	132			
Tetrachloroethene	4.80	ug/L	1.0	96	78	137			
Toluene	4.72	ug/L	1.0	94	78	134			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R81665		
Sample ID: Ics090506	Laboratory Control Sample			Run: SUB-B81665			09/05/06 12:57		
1,1,1-Trichloroethane	4.64	ug/L	1.0	93	64	141			
1,1,2-Trichloroethane	4.60	ug/L	1.0	92	72	133			
Trichloroethene	4.68	ug/L	1.0	94	75	138			
Trichlorofluoromethane	4.68	ug/L	1.0	94	58	139			
1,2,3-Trichloropropane	4.24	ug/L	1.0	85	67	133			
Vinyl acetate	3.45	ug/L	1.0	69	31	124			
Vinyl chloride	4.56	ug/L	1.0	91	66	140			
m+p-Xylenes	9.56	ug/L	1.0	96	78	133			
o-Xylene	4.84	ug/L	1.0	97	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	117	70	130			
Surr: Dibromofluoromethane			1.0	113	77	126			
Surr: p-Bromofluorobenzene			1.0	110	76	127			
Surr: Toluene-d8			1.0	113	79	122			
Sample ID: mbik090506	Method Blank			Run: SUB-B81665			09/05/06 13:54		
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0						
Acetone	ND	ug/L	20						
Acrylonitrile	ND	ug/L	20						
Benzene	ND	ug/L	0.50						
Bromochloromethane	ND	ug/L	0.50						
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Bromomethane	ND	ug/L	0.50						
Carbon disulfide	ND	ug/L	1.0						
Carbon tetrachloride	ND	ug/L	0.50						
Chlorobenzene	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Chloromethane	ND	ug/L	0.50						
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0						
1,2-Dibromoethane	ND	ug/L	0.50						
Dibromomethane	ND	ug/L	0.50						
1,2-Dichlorobenzene	ND	ug/L	0.50						
1,4-Dichlorobenzene	ND	ug/L	0.50						
Dichlorodifluoromethane	ND	ug/L	0.50						
1,1-Dichloroethane	ND	ug/L	0.50						
1,2-Dichloroethane	ND	ug/L	0.50						
1,1-Dichloroethene	ND	ug/L	0.50						
cis-1,2-Dichloroethene	ND	ug/L	0.50						
trans-1,2-Dichloroethene	ND	ug/L	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R81665		
Sample ID: mblk090506	Method Blank		Run: SUB-B81665				09/05/06 13:54		
1,2-Dichloropropane	ND	ug/L	0.50						
cis-1,3-Dichloropropene	ND	ug/L	0.50						
trans-1,3-Dichloropropene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
2-Hexanone	ND	ug/L	20						
Iodomethane	ND	ug/L	1.0						
Methyl ethyl ketone	ND	ug/L	20						
Methyl isobutyl ketone	ND	ug/L	20						
Methylene chloride	ND	ug/L	0.50						
Styrene	ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50						
Tetrachloroethene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
1,1,1-Trichloroethane	ND	ug/L	0.50						
1,1,2-Trichloroethane	ND	ug/L	0.50						
Trichloroethene	ND	ug/L	0.50						
Trichlorofluoromethane	ND	ug/L	0.50						
1,2,3-Trichloropropane	ND	ug/L	0.50						
Vinyl acetate	ND	ug/L	1.0						
Vinyl chloride	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	120	70	130			
Surr: Dibromofluoromethane			0.50	116	77	126			
Surr: p-Bromofluorobenzene			0.50	112	76	127			
Surr: Toluene-d8			0.50	111	79	122			
Sample ID: B06082350-002Hms	Sample Matrix Spike		Run: SUB-B81665				09/05/06 20:52		
Acetone	46.0	ug/L	20	92	62	130	0.0	20	
Acrylonitrile	47.6	ug/L	20	95	60	130	0.0	20	
Benzene	4.76	ug/L	1.0	95	71	133	0.0	20	
Bromochloromethane	4.56	ug/L	1.0	91	68	131	0.0	20	
Bromodichloromethane	4.36	ug/L	1.0	87	67	138	0.0	20	
Bromoform	4.36	ug/L	1.0	87	64	136	0.0	20	
Bromomethane	5.24	ug/L	1.0	105	60	138	0.0	20	
Carbon disulfide	3.70	ug/L	1.0	74	46	146	0.0	20	
Carbon tetrachloride	4.60	ug/L	1.0	92	61	144	0.0	20	
Chlorobenzene	4.80	ug/L	1.0	96	78	136	0.0	20	
Chlorodibromomethane	4.56	ug/L	1.0	91	72	136	0.0	20	
Chloroethane	5.16	ug/L	1.0	103	64	136	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R81665		
Sample ID: B06082350-002Hms	Sample Matrix Spike		Run: SUB-B81665				09/05/06 20:52		
Chloroform	4.60	ug/L	1.0	92	69	133	0.0	20	
Chloromethane	5.32	ug/L	1.0	106	63	149	0.0	20	
1,2-Dibromo-3-chloropropane	4.44	ug/L	1.0	89	63	125	0.0	20	
1,2-Dibromoethane	4.76	ug/L	1.0	95	75	131	0.0	20	
Dibromomethane	4.68	ug/L	1.0	94	72	133	0.0	20	
1,2-Dichlorobenzene	4.72	ug/L	1.0	94	78	129	0.0	20	
1,4-Dichlorobenzene	4.60	ug/L	1.0	92	78	132	0.0	20	
trans-1,4-Dichloro-2-butene	4.44	ug/L	1.0	89	50	142	0.0	20	
Dichlorodifluoromethane	5.28	ug/L	1.0	106	55	141	0.0	20	
1,1-Dichloroethane	4.68	ug/L	1.0	94	72	130	0.0	20	
1,2-Dichloroethane	4.80	ug/L	1.0	96	57	146	0.0	20	
1,1-Dichloroethene	4.48	ug/L	1.0	90	66	142	0.0	20	
cis-1,2-Dichloroethene	4.72	ug/L	1.0	94	74	133	0.0	20	
trans-1,2-Dichloroethene	4.72	ug/L	1.0	94	76	138	0.0	20	
1,2-Dichloropropane	4.76	ug/L	1.0	95	72	135	0.0	20	
cis-1,3-Dichloropropene	4.88	ug/L	1.0	98	75	132	0.0	20	
trans-1,3-Dichloropropene	5.24	ug/L	1.0	105	77	145	0.0	20	
Ethylbenzene	4.60	ug/L	1.0	92	78	131	0.0	20	
2-Hexanone	50.0	ug/L	20	100	72	131	0.0	20	
Iodomethane	5.28	ug/L	1.0	106	66	132	0.0	20	
Methyl ethyl ketone	50.4	ug/L	20	101	55	145	0.0	20	
Methyl isobutyl ketone	50.4	ug/L	20	101	73	129	0.0	20	
Methylene chloride	4.52	ug/L	1.0	90	73	126	0.0	20	
Styrene	3.86	ug/L	1.0	77	76	134	0.0	20	
1,1,1,2-Tetrachloroethane	4.60	ug/L	1.0	92	75	135	0.0	20	
1,1,2,2-Tetrachloroethane	4.64	ug/L	1.0	93	72	132	0.0	20	
Tetrachloroethene	4.64	ug/L	1.0	93	78	137	0.0	20	
Toluene	4.60	ug/L	1.0	92	78	134	0.0	20	
1,1,1-Trichloroethane	4.64	ug/L	1.0	93	64	141	0.0	20	
1,1,2-Trichloroethane	4.60	ug/L	1.0	92	72	133	0.0	20	
Trichloroethene	4.60	ug/L	1.0	92	75	138	0.0	20	
Trichlorofluoromethane	5.04	ug/L	1.0	101	58	139	0.0	20	
1,2,3-Trichloropropane	4.24	ug/L	1.0	85	67	133	0.0	20	
Vinyl acetate	3.78	ug/L	1.0	76	42	120	0.0	20	
Vinyl chloride	4.88	ug/L	1.0	98	66	140	0.0	20	
m+p-Xylenes	9.20	ug/L	1.0	92	78	133	0.0	20	
o-Xylene	4.76	ug/L	1.0	95	79	136	0.0	20	
Surr: 1,2-Dichloroethane-d4			1.0	119	70	130			
Surr: Dibromofluoromethane			1.0	115	77	126			
Surr: p-Bromofluorobenzene			1.0	110	76	127			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: B_R81665
Sample ID: B06082350-002Hms	Sample Matrix Spike			Run: SUB-B81665				09/05/06 20:52	
Surr: Toluene-d8			1.0	112	79	122			
Sample ID: B06082350-002Hmsd	Sample Matrix Spike Duplicate			Run: SUB-B81665				09/05/06 21:20	
Acetone	47.6	ug/L	20	95	62	130	3.4	20	
Acrylonitrile	49.2	ug/L	20	98	60	130	3.3	20	
Benzene	4.92	ug/L	1.0	98	71	133	3.3	20	
Bromochloromethane	4.72	ug/L	1.0	94	68	131	3.4	20	
Bromodichloromethane	4.48	ug/L	1.0	90	67	138	2.7	20	
Bromoform	4.52	ug/L	1.0	90	64	136	3.6	20	
Bromomethane	5.60	ug/L	1.0	112	60	138	6.6	20	
Carbon disulfide	3.73	ug/L	1.0	75	46	146	1.0	20	
Carbon tetrachloride	4.80	ug/L	1.0	96	61	144	4.3	20	
Chlorobenzene	4.96	ug/L	1.0	99	78	136	3.3	20	
Chlorodibromomethane	4.76	ug/L	1.0	95	72	136	4.3	20	
Chloroethane	5.48	ug/L	1.0	110	64	136	6.0	20	
Chloroform	4.76	ug/L	1.0	95	69	133	3.4	20	
Chloromethane	5.68	ug/L	1.0	114	63	149	6.5	20	
1,2-Dibromo-3-chloropropane	4.64	ug/L	1.0	93	63	125	4.4	20	
1,2-Dibromoethane	5.00	ug/L	1.0	100	75	131	4.9	20	
Dibromomethane	4.88	ug/L	1.0	98	72	133	4.2	20	
1,2-Dichlorobenzene	4.96	ug/L	1.0	99	78	129	5.0	20	
1,4-Dichlorobenzene	4.88	ug/L	1.0	98	78	132	5.9	20	
trans-1,4-Dichloro-2-butene	5.44	ug/L	1.0	109	50	142	20	20	R
Dichlorodifluoromethane	5.52	ug/L	1.0	110	55	141	4.4	20	
1,1-Dichloroethane	4.80	ug/L	1.0	96	72	130	2.5	20	
1,2-Dichloroethane	4.96	ug/L	1.0	99	57	146	3.3	20	
1,1-Dichloroethene	4.72	ug/L	1.0	94	66	142	5.2	20	
cis-1,2-Dichloroethene	4.84	ug/L	1.0	97	74	133	2.5	20	
trans-1,2-Dichloroethene	5.00	ug/L	1.0	100	76	138	5.8	20	
1,2-Dichloropropane	4.96	ug/L	1.0	99	72	135	4.1	20	
cis-1,3-Dichloropropene	4.96	ug/L	1.0	99	75	132	1.6	20	
trans-1,3-Dichloropropene	5.40	ug/L	1.0	108	77	145	3.0	20	
Ethylbenzene	4.76	ug/L	1.0	95	78	131	3.4	20	
2-Hexanone	52.4	ug/L	20	105	72	131	4.7	20	
Iodomethane	5.32	ug/L	1.0	106	66	132	0.8	20	
Methyl ethyl ketone	54.0	ug/L	20	108	55	145	6.9	20	
Methyl isobutyl ketone	52.8	ug/L	20	106	73	129	4.7	20	
Methylene chloride	4.72	ug/L	1.0	94	73	126	4.3	20	
Styrene	4.60	ug/L	1.0	92	76	134	18	20	
1,1,1,2-Tetrachloroethane	4.80	ug/L	1.0	96	75	135	4.3	20	
1,1,2,2-Tetrachloroethane	4.96	ug/L	1.0	99	72	132	6.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Client: Hydrometrics Inc

Report Date: 09/11/06

Project: 1273 City of Helena SW Sampling GW Extractions

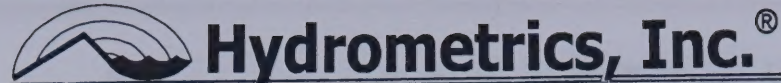
Work Order: H06080276

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R81665		
Sample ID: B06082350-002Hmsd	Sample Matrix Spike Duplicate				Run: SUB-B81665			09/05/06 21:20	
Tetrachloroethene	4.76	ug/L	1.0	95	78	137	2.6	20	
Toluene	4.84	ug/L	1.0	97	78	134	5.1	20	
1,1,1-Trichloroethane	4.84	ug/L	1.0	97	64	141	4.2	20	
1,1,2-Trichloroethane	4.80	ug/L	1.0	96	72	133	4.3	20	
Trichloroethene	4.72	ug/L	1.0	94	75	138	2.6	20	
Trichlorofluoromethane	5.28	ug/L	1.0	106	58	139	4.7	20	
1,2,3-Trichloropropane	4.40	ug/L	1.0	88	67	133	3.7	20	
Vinyl acetate	3.92	ug/L	1.0	78	42	120	3.8	20	
Vinyl chloride	5.12	ug/L	1.0	102	66	140	4.8	20	
m+p-Xylenes	9.84	ug/L	1.0	98	78	133	6.7	20	
o-Xylene	4.92	ug/L	1.0	98	79	136	3.3	20	
Surr: 1,2-Dichloroethane-d4			1.0	116	70	130			
Surr: Dibromofluoromethane			1.0	115	77	126			
Surr: p-Bromofluorobenzene			1.0	112	76	127			
Surr: Toluene-d8			1.0	114	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

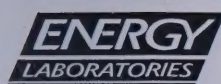
HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples:

☐ Accepted ☐ Declined

Signature _____



Energy Laboratories Inc

Sample Receipt Checklist

Client Name Hydrometrics Inc

Date and Time Received: 8/28/2006 2:10:00 PM

Work Order Number H06080276

Received by rit

Login completed by: Roxanne L. Tubbs

8/28/2006 2:10:00

Reviewed by

Signature

Date

Initials

Date

Carrier name Hand Del

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	17.5°C From Field
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Adjusted? _____ Checked by _____

Contact and Corrective Action Comments:

None

CASE NARRATIVE

ANALYTICAL SUMMARY REPORT

October 06, 2006

Richard Lane

Hydrometrics Inc-Helena

3020 Bozeman Ave.

Helena, MT 59601

Workorder No.: H06100009

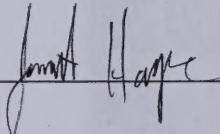
Project Name: 1273 City of Helena SW

Energy Laboratories Inc received the following 2 samples from Hydrometrics Inc-Helena on 10/2/2006 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H06100009-001	CHHL-0609-100	09/29/06 10:00	10/02/06	Aqueous	8260-Volatile Organic Comp, 40 CFR Part 258 App I
H06100009-002	CHHL-0609-101	09/29/06 10:15	10/02/06	Aqueous	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By: 

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW
Lab ID: H06100009-001
Client Sample ID: CHHL-0609-100

Pond

Report Date: 10/06/06
Collection Date: 09/29/06 10:00
Date Received: 10/02/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	10/04/06 12:50 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	10/04/06 12:50 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Chloroform	0.25	ug/L	J	0.50		SW8260B	10/04/06 12:50 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	10/04/06 12:50 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	10/04/06 12:50 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	10/04/06 12:50 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Tetrachloroethene	0.35	ug/L	J	0.50		SW8260B	10/04/06 12:50 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

Definitions: QCL - Quality control limit.

ND - Not detected at the reporting limit.

J - Estimated value. The analyte was present but less than the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW
Lab ID: H06100009-001
Client Sample ID: CHHL-0609-100

Report Date: 10/06/06
Collection Date: 09/29/06 10:00
DateReceived: 10/02/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	10/04/06 12:50 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	10/04/06 12:50 / eli-b
Surr: 1,2-Dichloroethane-d4	104	%REC			70-130	SW8260B	10/04/06 12:50 / eli-b
Surr: Dibromofluoromethane	114	%REC			77-126	SW8260B	10/04/06 12:50 / eli-b
Surr: p-Bromofluorobenzene	113	%REC			76-127	SW8260B	10/04/06 12:50 / eli-b
Surr: Toluene-d8	113	%REC			79-122	SW8260B	10/04/06 12:50 / eli-b
Chloroform	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
Bromoform	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
Dibromochloromethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1-Dichloroethene	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1-Trichloroethene	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2-Trichloroethene	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,2-Dichloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,2-Dibromoethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.05		SW8260B	10/04/06 12:50 / eli-b
1,1,1,2-Tetrachloroethane	ND						

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW
Lab ID: H06100009-002
Client Sample ID: CHHL-0609-101

Sprinkler

Report Date: 10/06/06
Collection Date: 09/29/06 10:15
Date Received: 10/02/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	10/04/06 13:26 / eli-b
Acrylonitrile	ND	ug/L		20		SW8260B	10/04/06 13:26 / eli-b
Benzene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Bromochloromethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Bromodichloromethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Bromoform	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Bromomethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Carbon disulfide	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
Carbon tetrachloride	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Chlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Chloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Chloroform	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Chloromethane	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
1,2-Dibromoethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Dibromomethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,2-Dichlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,4-Dichlorobenzene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
trans-1,4-Dichloro-2-butene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
1,1-Dichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,2-Dichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,1-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
cis-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
trans-1,2-Dichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,2-Dichloropropane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
cis-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
trans-1,3-Dichloropropene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Ethylbenzene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
2-Hexanone	ND	ug/L		20		SW8260B	10/04/06 13:26 / eli-b
Iodomethane	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
Methyl ethyl ketone	ND	ug/L		20		SW8260B	10/04/06 13:26 / eli-b
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	10/04/06 13:26 / eli-b
Methylene chloride	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Styrene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Tetrachloroethene	0.17	ug/L	J	0.50		SW8260B	10/04/06 13:26 / eli-b
Toluene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,1,1-Trichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,1,2-Trichloroethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW
Lab ID: H06100009-002
Client Sample ID: CHHL-0609-101

Report Date: 10/06/06
Collection Date: 09/29/06 10:15
DateReceived: 10/02/06
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Trichlorofluoromethane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
1,2,3-Trichloropropane	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Vinyl acetate	ND	ug/L		1.0		SW8260B	10/04/06 13:26 / eli-b
Vinyl chloride	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
m+p-Xylenes	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
o-Xylene	ND	ug/L		0.50		SW8260B	10/04/06 13:26 / eli-b
Surr: 1,2-Dichloroethane-d4	111	%REC			70-130	SW8260B	10/04/06 13:26 / eli-b
Surr: Dibromofluoromethane	116	%REC			77-126	SW8260B	10/04/06 13:26 / eli-b
Surr: p-Bromofluorobenzene	111	%REC			76-127	SW8260B	10/04/06 13:26 / eli-b
Surr: Toluene-d8	112	%REC			79-122	SW8260B	10/04/06 13:26 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc-Helena

Report Date: 10/06/06

Project: 1273 City of Helena SW

Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: Ics100406	Laboratory Control Sample			Run: SUB-B83022			10/04/06 11:25		
trans-1,4-Dichloro-2-butene	4.24	ug/L	1.0	85	50	142			
Acetone	42.4	ug/L	20	85	62	130			
Acrylonitrile	50.0	ug/L	20	100	60	130			
Benzene	5.00	ug/L	1.0	100	71	133			
Bromochloromethane	4.80	ug/L	1.0	96	68	131			
Bromodichloromethane	4.48	ug/L	1.0	90	67	138			
Bromoform	4.36	ug/L	1.0	87	64	136			
Bromomethane	5.44	ug/L	1.0	109	60	138			
Carbon disulfide	3.70	ug/L	1.0	74	46	145			
Carbon tetrachloride	4.68	ug/L	1.0	94	61	144			
Chlorobenzene	5.00	ug/L	1.0	100	78	136			
Chlorodibromomethane	4.60	ug/L	1.0	92	72	136			
Chloroethane	5.00	ug/L	1.0	100	64	136			
Chloroform	4.92	ug/L	1.0	98	69	133			
Chloromethane	5.44	ug/L	1.0	109	63	149			
1,2-Dibromo-3-chloropropane	4.72	ug/L	1.0	94	63	125			
1,2-Dibromoethane	4.96	ug/L	1.0	99	75	131			
Dibromomethane	4.88	ug/L	1.0	98	72	133			
1,2-Dichlorobenzene	5.04	ug/L	1.0	101	78	129			
1,4-Dichlorobenzene	5.16	ug/L	1.0	103	78	131			
Dichlorodifluoromethane	4.36	ug/L	1.0	87	55	141			
1,1-Dichloroethane	4.88	ug/L	1.0	98	72	130			
1,2-Dichloroethane	4.84	ug/L	1.0	97	57	146			
1,1-Dichloroethene	4.88	ug/L	1.0	98	66	142			
cis-1,2-Dichloroethene	4.96	ug/L	1.0	99	74	133			
trans-1,2-Dichloroethene	5.08	ug/L	1.0	102	76	138			
1,2-Dichloropropane	4.96	ug/L	1.0	99	72	135			
cis-1,3-Dichloropropene	5.12	ug/L	1.0	102	75	132			
trans-1,3-Dichloropropene	5.40	ug/L	1.0	108	77	145			
Ethylbenzene	4.84	ug/L	1.0	97	78	131			
2-Hexanone	46.8	ug/L	20	94	72	131			
Iodomethane	5.44	ug/L	1.0	109	66	132			
Methyl ethyl ketone	48.0	ug/L	20	96	55	145			
Methyl isobutyl ketone	46.8	ug/L	20	94	73	129			
Methylene chloride	4.76	ug/L	1.0	95	73	126			
Styrene	4.92	ug/L	1.0	98	76	134			
1,1,1,2-Tetrachloroethane	4.80	ug/L	1.0	96	75	135			
1,1,2,2-Tetrachloroethane	5.12	ug/L	1.0	102	72	132			
Tetrachloroethene	4.80	ug/L	1.0	96	78	137			
Toluene	4.92	ug/L	1.0	98	78	134			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



QA/QC Summary Report

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW

Report Date: 10/06/06
Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: lcs100406	Laboratory Control Sample			Run: SUB-B83022			10/04/06 11:25		
1,1,1-Trichloroethane	4.84	ug/L	1.0	97	64	141			
1,1,2-Trichloroethane	4.88	ug/L	1.0	98	72	133			
Trichloroethene	4.84	ug/L	1.0	97	75	138			
Trichlorofluoromethane	4.64	ug/L	1.0	93	58	139			
1,2,3-Trichloropropane	4.40	ug/L	1.0	88	67	133			
Vinyl acetate	5.12	ug/L	1.0	102	31	124			
Vinyl chloride	4.68	ug/L	1.0	94	66	140			
m+p-Xylenes	10.0	ug/L	1.0	100	78	133			
o-Xylene	5.04	ug/L	1.0	101	79	136			
Surr: 1,2-Dichloroethane-d4			1.0	110	70	130			
Surr: Dibromofluoromethane			1.0	116	77	126			
Surr: p-Bromofluorobenzene			1.0	112	76	127			
Surr: Toluene-d8			1.0	112	79	122			
Sample ID: mblk100406	Method Blank			Run: SUB-B83022			10/04/06 12:22		
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0						
Acetone	ND	ug/L	20						
Acrylonitrile	ND	ug/L	20						
Benzene	ND	ug/L	0.50						
Bromochloromethane	ND	ug/L	0.50						
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Bromomethane	ND	ug/L	0.50						
Carbon disulfide	ND	ug/L	1.0						
Carbon tetrachloride	ND	ug/L	0.50						
Chlorobenzene	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Chloromethane	ND	ug/L	1.0						
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0						
1,2-Dibromoethane	ND	ug/L	0.50						
Dibromomethane	ND	ug/L	0.50						
1,2-Dichlorobenzene	ND	ug/L	0.50						
1,4-Dichlorobenzene	ND	ug/L	0.50						
Dichlorodifluoromethane	ND	ug/L	1.0						
1,1-Dichloroethane	ND	ug/L	0.50						
1,2-Dichloroethane	ND	ug/L	0.50						
1,1-Dichloroethene	ND	ug/L	0.50						
cis-1,2-Dichloroethene	ND	ug/L	0.50						
trans-1,2-Dichloroethene	ND	ug/L	0.50						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc-Helena
Project: 1273 City of Helena SW

Report Date: 10/06/06
Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: mblk100406	Method Blank				Run: SUB-B83022		10/04/06 12:22		
1,2-Dichloropropane	ND	ug/L	0.50						
cis-1,3-Dichloropropene	ND	ug/L	0.50						
trans-1,3-Dichloropropene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
2-Hexanone	ND	ug/L	20						
Iodomethane	ND	ug/L	1.0						
Methyl ethyl ketone	ND	ug/L	20						
Methyl isobutyl ketone	ND	ug/L	20						
Methylene chloride	ND	ug/L	0.50						
Styrene	ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50						
Tetrachloroethene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
1,1,1-Trichloroethane	ND	ug/L	0.50						
1,1,2-Trichloroethane	ND	ug/L	0.50						
Trichloroethene	ND	ug/L	0.50						
Trichlorofluoromethane	ND	ug/L	0.50						
1,2,3-Trichloropropane	ND	ug/L	0.50						
Vinyl acetate	ND	ug/L	1.0						
Vinyl chloride	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	105	70	130			
Surr: Dibromofluoromethane			0.50	114	77	126			
Surr: p-Bromofluorobenzene			0.50	114	76	127			
Surr: Toluene-d8			0.50	114	79	122			
Sample ID: B0610331-005Ams	Sample Matrix Spike				Run: SUB-B83022		10/04/06 14:23		
trans-1,4-Dichloro-2-butene	9.20	ug/L	2.0	92	50	142			
Acetone	88.0	ug/L	40	88	62	130			
Acrylonitrile	100	ug/L	40	100	60	130			
Benzene	10.7	ug/L	2.0	107	71	133			
Bromochloromethane	9.92	ug/L	2.0	99	68	131			
Bromodichloromethane	9.52	ug/L	2.0	95	67	138			
Bromoform	9.28	ug/L	2.0	93	64	136			
Bromomethane	11.2	ug/L	2.0	112	60	138			
Carbon disulfide	7.92	ug/L	2.0	79	46	145			
Carbon tetrachloride	10.2	ug/L	2.0	102	61	144			
Chlorobenzene	10.7	ug/L	2.0	107	78	136			
Chlorodibromomethane	9.84	ug/L	2.0	98	72	136			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc-Helena

Project: 1273 City of Helena SW

Report Date: 10/06/06

Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: B0610331-005Ams	Sample Matrix Spike			Run: SUB-B83022			10/04/06 14:23		
Chloroethane	10.7	ug/L	2.0	107	64	136			
Chloroform	10.3	ug/L	2.0	103	69	133			
Chloromethane	11.4	ug/L	2.0	114	63	149			
1,2-Dibromo-3-chloropropane	9.36	ug/L	2.0	94	63	125			
1,2-Dibromoethane	10.5	ug/L	2.0	105	75	131			
Dibromomethane	10.3	ug/L	2.0	103	72	133			
1,2-Dichlorobenzene	10.6	ug/L	2.0	106	78	129			
1,4-Dichlorobenzene	10.6	ug/L	2.0	106	78	131			
Dichlorodifluoromethane	10.0	ug/L	2.0	100	55	141			
1,1-Dichloroethane	10.5	ug/L	2.0	105	72	130			
1,2-Dichloroethane	10.2	ug/L	2.0	102	57	146			
1,1-Dichloroethene	10.4	ug/L	2.0	104	66	142			
cis-1,2-Dichloroethene	10.2	ug/L	2.0	102	74	133			
trans-1,2-Dichloroethene	10.8	ug/L	2.0	108	76	138			
1,2-Dichloropropane	10.5	ug/L	2.0	105	72	135			
cis-1,3-Dichloropropene	11.0	ug/L	2.0	110	75	132			
trans-1,3-Dichloropropene	11.6	ug/L	2.0	116	77	145			
Ethylbenzene	10.5	ug/L	2.0	105	78	131			
2-Hexanone	99.2	ug/L	40	99	72	131			
Iodomethane	11.3	ug/L	2.0	113	66	132			
Methyl ethyl ketone	100	ug/L	40	100	55	145			
Methyl isobutyl ketone	102	ug/L	40	102	73	129			
Methylene chloride	9.84	ug/L	2.0	98	73	126			
Styrene	10.6	ug/L	2.0	106	76	134			
1,1,1,2-Tetrachloroethane	10.2	ug/L	2.0	102	75	135			
1,1,2,2-Tetrachloroethane	10.4	ug/L	2.0	104	72	132			
Tetrachloroethene	10.6	ug/L	2.0	106	78	137			
Toluene	10.7	ug/L	2.0	107	78	134			
1,1,1-Trichloroethane	10.2	ug/L	2.0	102	64	141			
1,1,2-Trichloroethane	10.3	ug/L	2.0	103	72	133			
Trichloroethene	10.5	ug/L	2.0	105	75	138			
Trichlorofluoromethane	10.2	ug/L	2.0	102	58	139			
1,2,3-Trichloropropane	9.20	ug/L	2.0	92	67	133			
Vinyl acetate	10.4	ug/L	2.0	104	31	124			
Vinyl chloride	9.84	ug/L	2.0	98	66	140			
m+p-Xylenes	21.9	ug/L	2.0	110	78	133			
o-Xylene	11.0	ug/L	2.0	110	79	136			
Surr: 1,2-Dichloroethane-d4			2.0	106	70	130			
Surr: Dibromofluoromethane			2.0	115	77	126			
Surr: p-Bromofluorobenzene			2.0	112	76	127			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc-Helena

Report Date: 10/06/06

Project: 1273 City of Helena SW

Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: B0610331-005Ams	Sample Matrix Spike		Run: SUB-B83022				10/04/06 14:23		
Surr: Toluene-d8			2.0	114	79	122			
-The sample was diluted by 2 times before spiking.									
Sample ID: B0610331-005Amsd	Sample Matrix Spike Duplicate		Run: SUB-B83022				10/04/06 15:21		
trans-1,4-Dichloro-2-butene	8.16	ug/L	2.0	82	50	142	12	20	
Acetone	76.2	ug/L	40	76	62	130	14	20	
Acrylonitrile	90.4	ug/L	40	90	60	130	10	20	
Benzene	9.76	ug/L	2.0	98	71	133	9.4	20	
Bromochloromethane	9.28	ug/L	2.0	93	68	131	6.7	20	
Bromodichloromethane	8.80	ug/L	2.0	88	67	138	7.9	20	
Bromoform	8.48	ug/L	2.0	85	64	136	9.0	20	
Brornomethane	10.1	ug/L	2.0	101	60	138	11	20	
Carbon disulfide	6.98	ug/L	2.0	70	46	145	13	20	
Carbon tetrachloride	9.52	ug/L	2.0	95	61	144	6.5	20	
Chlorobenzene	9.92	ug/L	2.0	99	78	136	7.8	20	
Chlorodibromomethane	9.20	ug/L	2.0	92	72	136	6.7	20	
Chloroethane	9.36	ug/L	2.0	94	64	136	14	20	
Chloroform	9.60	ug/L	2.0	96	69	133	7.2	20	
Chloromethane	9.92	ug/L	2.0	99	63	149	14	20	
1,2-Dibromo-3-chloropropane	8.88	ug/L	2.0	89	63	125	5.3	20	
1,2-Dibromoethane	9.60	ug/L	2.0	96	75	131	8.8	20	
Dibromomethane	9.52	ug/L	2.0	95	72	133	8.1	20	
1,2-Dichlorobenzene	9.92	ug/L	2.0	99	78	129	7.0	20	
1,4-Dichlorobenzene	9.84	ug/L	2.0	98	78	131	7.8	20	
Dichlorodifluoromethane	8.88	ug/L	2.0	89	55	141	12	20	
1,1-Dichloroethane	9.68	ug/L	2.0	97	72	130	7.9	20	
1,2-Dichloroethane	9.44	ug/L	2.0	94	57	146	7.3	20	
1,1-Dichloroethene	9.68	ug/L	2.0	97	66	142	7.2	20	
cis-1,2-Dichloroethene	9.60	ug/L	2.0	96	74	133	5.7	20	
trans-1,2-Dichloroethene	9.92	ug/L	2.0	99	76	138	8.5	20	
1,2-Dichloropropane	9.60	ug/L	2.0	96	72	135	8.8	20	
cis-1,3-Dichloropropene	10.0	ug/L	2.0	100	75	132	9.2	20	
trans-1,3-Dichloropropene	10.6	ug/L	2.0	106	77	145	9.4	20	
Ethylbenzene	9.60	ug/L	2.0	96	78	131	8.8	20	
2-Hexanone	86.4	ug/L	40	86	72	131	14	20	
Iodomethane	10.0	ug/L	2.0	100	66	132	12	20	
Methyl ethyl ketone	88.0	ug/L	40	88	55	145	13	20	
Methyl isobutyl ketone	88.0	ug/L	40	88	73	129	14	20	
Methylene chloride	8.96	ug/L	2.0	90	73	126	9.4	20	
Styrene	9.60	ug/L	2.0	96	76	134	9.5	20	
1,1,1,2-Tetrachloroethane	9.28	ug/L	2.0	93	75	135	9.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Client: Hydrometrics Inc-Helena

Report Date: 10/06/06

Project: 1273 City of Helena SW

Work Order: H06100009

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B							Batch: B_R83022		
Sample ID: B0610331-005Amsd	Sample Matrix Spike Duplicate				Run: SUB-B83022			10/04/06 15:21	
1,1,2,2-Tetrachloroethane	9.76	ug/L	2.0	98	72	132	6.3	20	
Tetrachloroethene	9.84	ug/L	2.0	98	78	137	7.1	20	
Toluene	9.84	ug/L	2.0	98	78	134	8.6	20	
1,1,1-Trichloroethane	9.60	ug/L	2.0	96	64	141	5.7	20	
1,1,2-Trichloroethane	9.44	ug/L	2.0	94	72	133	8.9	20	
Trichloroethene	9.76	ug/L	2.0	98	75	138	7.1	20	
Trichlorofluoromethane	9.04	ug/L	2.0	90	58	139	12	20	
1,2,3-Trichloropropane	8.56	ug/L	2.0	86	67	133	7.2	20	
Vinyl acetate	9.44	ug/L	2.0	94	31	124	9.7	20	
Vinyl chloride	8.80	ug/L	2.0	88	66	140	11	20	
m+p-Xylenes	20.0	ug/L	2.0	100	78	133	9.2	20	
o-Xylene	10.0	ug/L	2.0	100	79	136	9.9	20	
Surr: 1,2-Dichloroethane-d4			2.0	106	70	130			
Surr: Dibromofluoromethane			2.0	114	77	126			
Surr: p-Bromofluorobenzene			2.0	113	76	127			
Surr: Toluene-d8			2.0	114	79	122			

-The sample was diluted by 2 times before spiking.

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

[illegible]



Energy Laboratories Inc

Sample Receipt Checklist

Client Name Hydrometrics Inc

Date and Time Received: 10/2/2006 1:32:00 PM

Work Order Number H06100009

Received by wjj

Login completed by: Wanda Johnson

10/2/2006 1:32:00

Reviewed by

Signature

Date

Initials

Date

Carrier name Hand Del

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	2 °C
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Adjusted? _____

Checked by _____

Contact and Corrective Action Comments:

None



Hydrometrics, Inc.®
consulting scientists, engineers, and contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-1252 E. Bldg.
(406) 443-0760 S. Bldg.
(406) 443-4155 W. Bldg.
www.hydrometrics.com

Lewis & Clark Co
City of Helena #90
grd wtr (corr. meas.)

July 9, 2002

RECEIVED

JUL 15 2002

MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

John Rundquist
Public Works Director
City of Helena
City/County Building
316 North Park Ave.
Helena, MT 59623

RE: Capture Zone Analysis at the City of Helena Landfill Groundwater Extraction System

Dear John,

This letter is to transmit the results of our capture zone analysis at the City of Helena landfill groundwater extraction system. This system was installed as part of the second addendum to the Corrective Measures Assessment (Hydrometrics, 1999) to remove tetrachloroethene (PCE) released into the groundwater from the Helena landfill and began operation on June 12, 2000. A capture zone analysis was performed in April and May of 2002 to better understand the operation of the system and to make recommendations to optimize the performance of the system. The capture zone analysis consisted of the collection of detailed water level data during system operation. This data was used to evaluate the zone of capture for the existing system and assess whether the system should be expanded through additional wells or increased pumping rates to further facilitate capture of PCE. The discussion that follows is provided to document the technical analyses that were conducted as discussed in our meeting with you on June 18, 2002. Our conclusions and recommendations are provided at the end of this letter.

Manual Water Level Monitoring

Beginning on April 29, 2002, two weeks prior to the start of the pumping test, and during the two-week pumping test, manual water levels measurements were taken on a weekly basis in monitoring wells HL-90-1, HL-90-2 and HL-90-3 and in extraction wells HL-99-1, HL-99-2, and HL-99-3. The locations of these wells are shown on Figure 1. The pumps in the extraction wells were activated on May 15, 2002, after the weekly water level measurements were taken. The flow in each well was based on the pumping rates for the last two years, determined by the original pumping tests performed after drilling. The rates were 25 gpm, 35 gpm, and 35 gpm for HL-99-1, HL-99-2 and HL-99-3, respectively. The data collected, corrected to show water level elevation rather than depth to water level, is shown in Table 1. The data collected on April 29, 2002 and on May 29, 2002 were contoured on separate maps to show the potentiometric surface before and after the pumping test. These contour maps are shown in Figure 2. Because no monitoring points exist between the extraction wells, a single cone of depression is shown rather than individual depressions as would actually be

seen. It is clear that the extraction system is definitely capturing water flowing through this area and causing a significant depression in the potentiometric surface.

Table 1. Water Elevations in Critical Wells During Capture Zone Analysis

Well	Date					
	4/29/02	5/1/02	5/10/02	5/15/02	5/22/02	5/29/02
HL-90-1	3888.18	No data	No data	3887.55	3885.83	3884.97
HL-90-2	3900.81	3900.35	3899.65	3899.18	3898.44	3899.07
HL-90-3	3901.05	3900.95	3900.18	3899.80	3897.50	3896.66
HL-99-1	3888.46	3888.33	3887.90	3887.46	3873.92	3870.20
HL-99-2	3890.04	3889.76	3889.65	3888.74	3862.13	3860.53
HL-99-3	3896.43	3896.43	3895.62	3895.24	3884.23	3882.60

Continuous Water Level Monitoring

On April 29, 2002, a pressure transducer and data logger were placed in monitoring well HL-90-1 and water levels were monitored every hour for two weeks prior to start-up of the groundwater extraction system. Figure 1 shows the location of this monitoring well and the extraction system. This provided background data and allowed us to view trends in the static water level under ambient conditions. On May 15, 2002, the pumps in the three extraction wells were started and hourly water levels measurements continued to be taken during the two-week pumping test. Figure 3 shows the graphed data collected by data logger, corrected to show water elevation rather than feed of head. The start-up of the extraction system is shown with a vertical line. This graph shows that water levels were already dropping under ambient conditions, but the rate of decline dramatically increased after the pumps were started. Monitoring well HL-90-1 is clearly within the capture zone of the groundwater extraction system and can provide valuable information concerning the aquifer characteristics in this area.

Data Interpretation

The time versus drawdown data collected by the data recorder during the pump test was downloaded into AQTESOLV for Windows, a computer program designed to calculate aquifer characteristics such as transmissivity and storativity from just such data. The location and pumping rates of each of the pumping wells were also entered into the program along with other information such as the saturated thickness of the aquifer and well completion data for each well. A Cooper-Jacob analysis of the late-time data yielded a transmissivity of 222 ft²/day. With a saturated thickness of 50 feet, this yields a hydraulic conductivity of 4.4 ft/day. A Theis analysis of the early data yielded a transmissivity of 780 ft²/day, or a hydraulic conductivity of 15.6 ft/day. The average hydraulic conductivity determined during the original pumping test of the extraction wells (performed in 1999 immediately after drilling) was 3.6 ft/day. The consistency of these numbers allows for a high degree of confidence in the data and in the calculations. This also implies that the groundwater flow models completed during the design of the groundwater extraction system were completed using aquifer characteristics supported by long-term testing. Therefore, the results obtained

from these flow models are still appropriate based on the most recent data and show that the present capture system is effectively capturing PCE from the landfill.

Evaluation of Maximum Pumping Rates

Although the existing wells appear to be effective at capturing residual PCE from the landfill, water quality at well HL-90-1 has not yet met the goal of 5 ppb. Additional groundwater capture may be desirable to increase the rate of PCE removal as well as to provide even more irrigation water to the golf course. To evaluate the maximum potential pumping rates of each existing extraction well, a spreadsheet was designed to use the Theis method to determine the cumulative drawdown in each well at varied pumping rates. Initially, the transmissivity for each extraction well was calibrated to yield the 14-day drawdown seen during the pumping test. Then, the length of pumping was extended to 180 days and the pumping rates varied until the maximum cumulative flow rate was achieved that left a minimum of 10 feet of water in each well. It was determined that a maximum of 140 gpm (20 gpm in HL-99-1, and 60 gpm each in HL-99-2 and HL-99-3) was theoretically possible. This is an additional 45 gpm beyond what the system is currently producing. Because the system was designed to accommodate additional pumping wells, the line capacity currently in place is sufficient to accommodate the increased flow. However, due to the increase in pressure resulting from the increase in flow, the existing low-pressure flow meters at each wellhead would need to be replaced with new high-pressure flow meters. The estimated cost associated with installing new flow meters, redoing some plumbing, and monitoring water levels throughout the operating season to determine the actual maximum pumping rates is \$6,000-\$12,000. This cost will be largely dependent on the amount of assistance provided by the City.

Next, a similar program was used to evaluate the potential of adding two additional wells between and approximately 50 feet north of the existing wells. In this scenario, a maximum of 160 gpm is theoretically possible. This would be the combined flow rate from the existing wells and two new wells. The analysis showed that adding more wells in this immediate area simply decreased the yield of the existing system producing only a limited increase in discharge. Groundwater modeling of the system using the TWODAN program confirmed these findings. As outlined in my letter to you dated May 17, 2002, the cost estimate to add two additional wells to this system is just under \$100,000.

Conclusions and Recommendations

The zone of influence determined by this study is similar to that predicted by the computer modeling completed earlier in the design phase of the groundwater extraction system and indicates the system is effectively capturing PCE from the landfill. It may nonetheless be desirable to maximize the pumping potential through this area to increase the remediation rate and to provide additional irrigation water to the golf course. Two options for increasing the amount of groundwater captured each season were evaluated: increasing pumping rates in the existing wells or adding two additional extraction wells offset from the first. The cost of each option was also evaluated. Based on price per gallon per minute of increased system capacity, maximizing the pumping rates in the existing wells is the obvious choice (\$222/gpm versus \$1538/gpm). As with the existing system, increasing the capacity will provide the City with additional water for the golf course, thereby repaying installation costs

John Rundquist

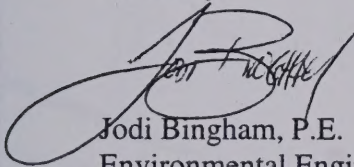
July 9, 2002

Page 4

over time. We recommend making the necessary changes to the plumbing and flow meters to accommodate the increased flow rate, maximizing the pumping rates, and monitoring water levels throughout the pumping season. In addition, adding time-operated clocks to each pump will allow us to monitor if the pumping rates are too high, forcing the pumps to cycle on and off, which is not desirable for capture system effectiveness.

If you have any questions concerning this data or our interpretation thereof, please do not hesitate to call.

Sincerely,



Jodi Bingham, P.E.
Environmental Engineer/Chemist

Attachments

c: Mike Wignot, Hydrometrics, Inc.
Pat Crowley, MDEQ

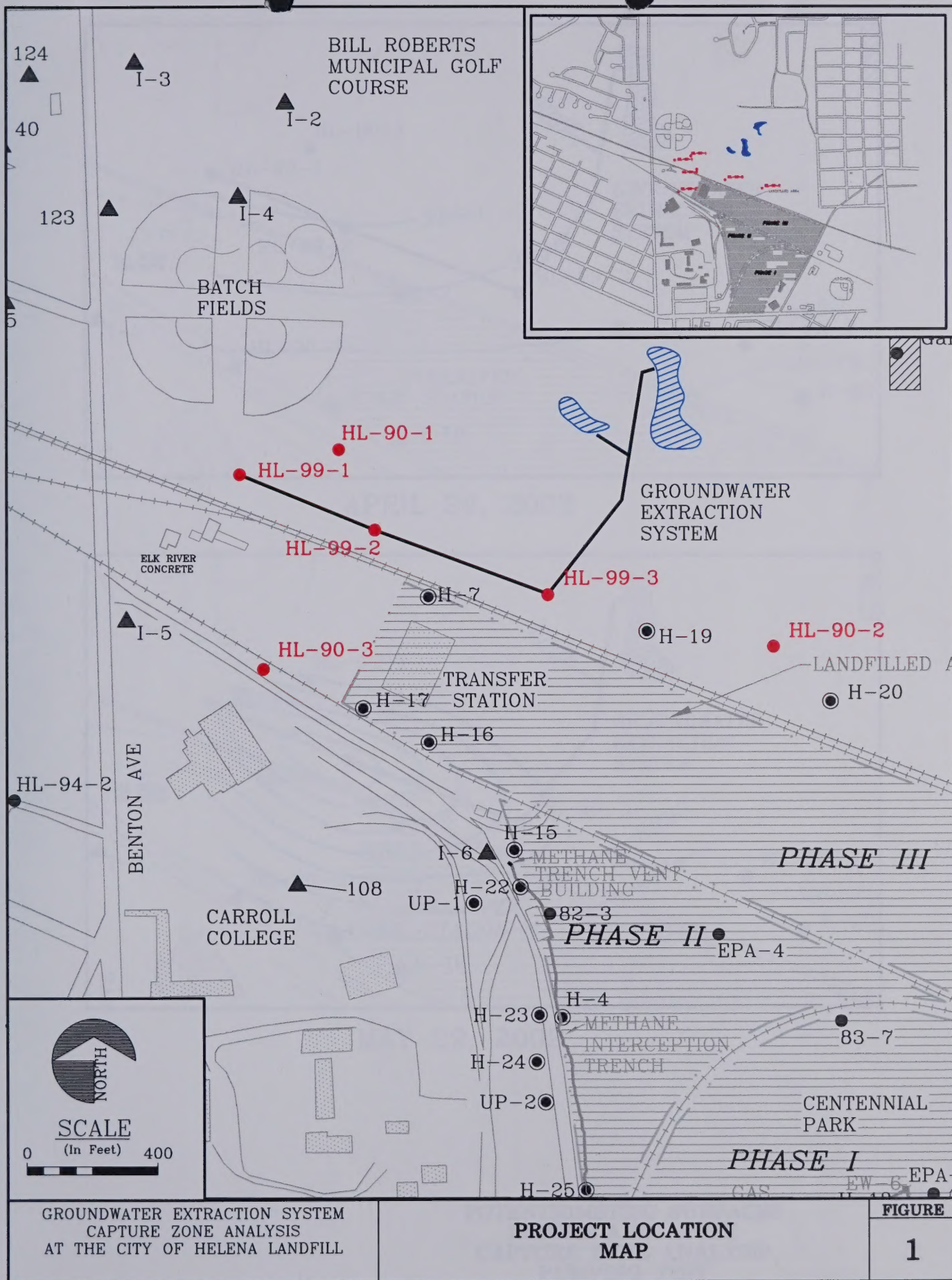
even time. We ... the ... changes in the ... and ...
to ... the ... and ...
... the ...
... will ... if the ...
... is not ...

I ... my ...
...

Respectfully,

John A. ...

...



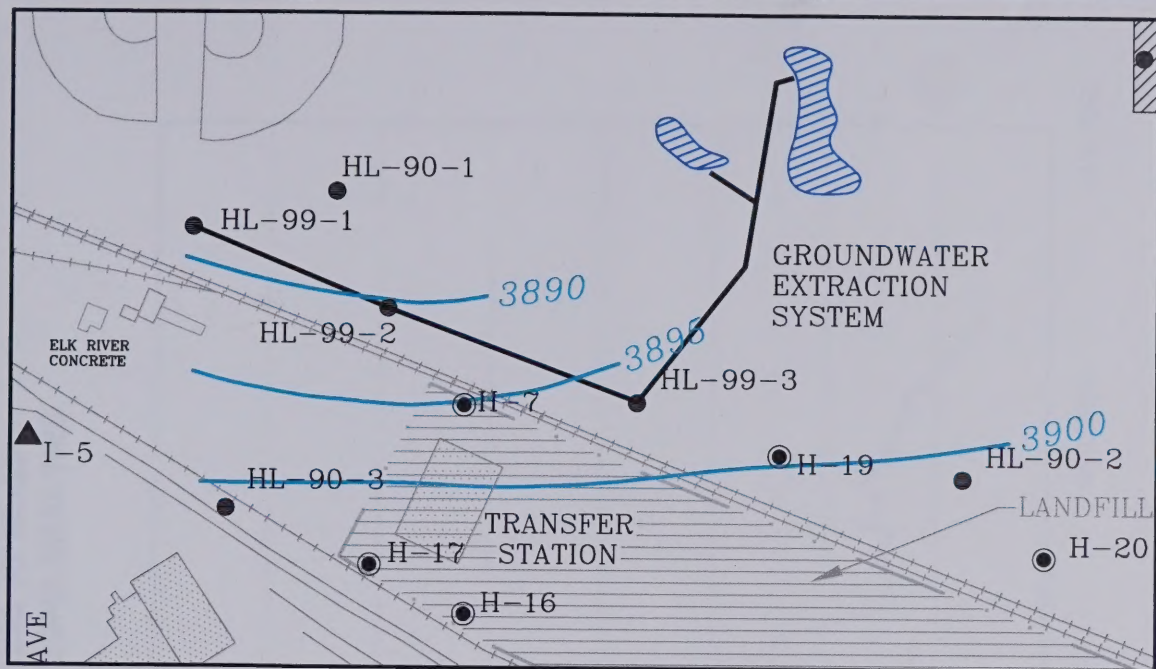


THE STUDY AREA
IS LOCATED IN THE
CENTRAL PART OF THE
COUNTRY

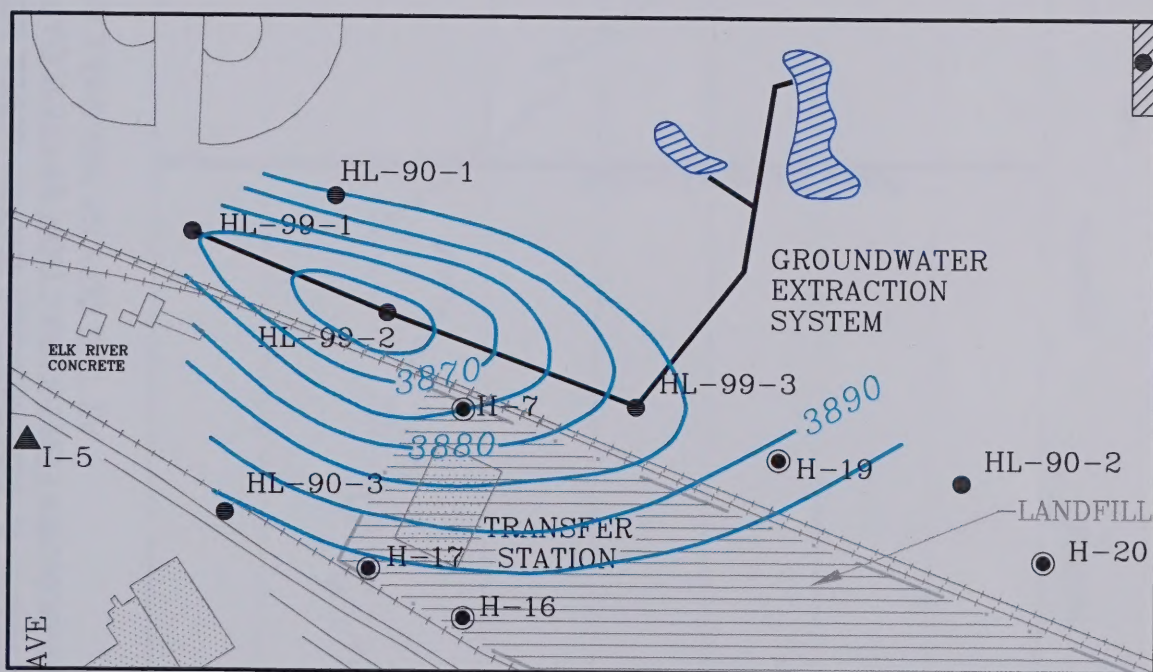


STUDY AREA
MAP

THE STUDY AREA IS LOCATED IN THE
CENTRAL PART OF THE COUNTRY



APRIL 29, 2002



MAY 29, 2002



SCALE

0 (In Feet) 400

GROUNDWATER EXTRACTION SYSTEM
CAPTURE ZONE ANALYSIS
AT THE CITY OF HELENA LANDFILL

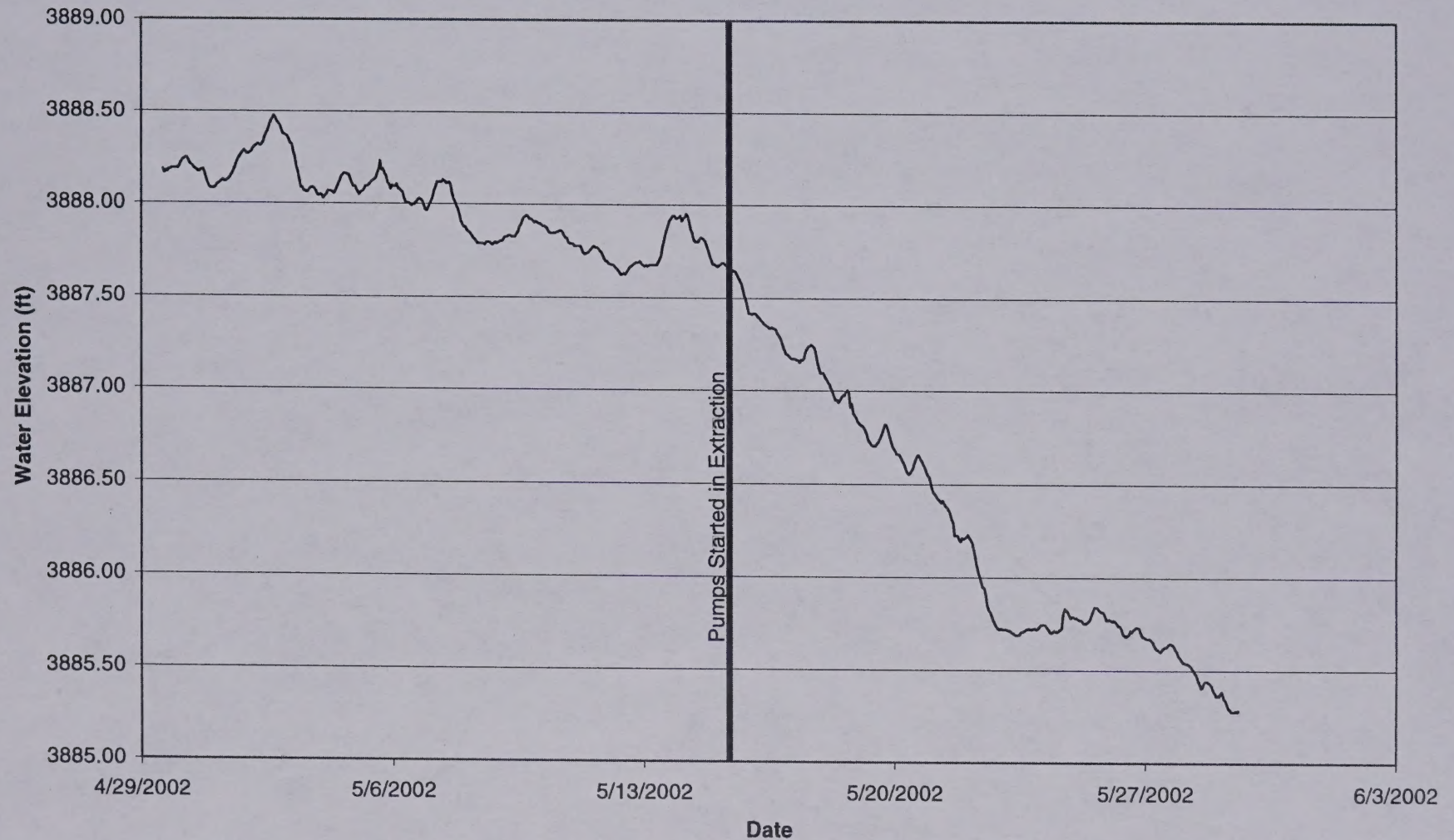
POTENTIOMETRIC SURFACES
BEFORE AND AFTER
CAPTURE ZONE ANALYSIS
PUMPING TEST

FIGURE

2



**FIGURE 3. CONTINUOUS WATER LEVEL MONITORING AT HL-90-1
GROUNDWATER EXTRACTION SYSTEM CAPTURE ZONE ANALYSIS
AT THE CITY OF HELENA LANDFILL**



90

County L+C
Facility & # Halena
Closure _____
Finan Assur _____
GW Corr Meas _____
GW Monitoring _____
GW Reports _____
Inspections _____
Other: _____

Landfarm
Liner
Methane
O & M
Run - On

THE

LIBRARY

OF THE

UNIVERSITY

OF

CHICAGO

RECEIVED

APR 10 1900

LIBRARY

OF THE

UNIVERSITY

OF

CHICAGO

SYNOPSIS OF GROUNDWATER MODELING AT THE CITY OF HELENA LANDFILL

Presented by:

Jodi Bingham, Environmental Engineer/Chemist

Bill Thompson, Hydrogeologist

From

Hydrometrics, Inc.

2727 Airport Road

Helena, MT 59601

(406) 443-4150

BACKGROUND

The Helena landfill, located east of Carroll College, west of the YMCA, and south of Bill Roberts Golf Course, was active from the late 1800's until 1994. In 1987 and 1989, the EPA investigated the site and concluded that site problems were not sufficiently severe to place the site on the National Priority List. However, EPA results suggested low levels of organics in the vicinity of the landfill. The City of Helena then hired Hydrometrics to confirm this finding. Additional sampling in 1989, 1990, and 1991 found very low concentrations of VOCs beneath and periferal to the landfill. When continued monitoring found levels of tetrachloroethene (PCE) above the maximum contaminant level (MCL) of 5 ppb in compliance wells, MDEQ required that a Corrective Measures Assessment (CMA) be completed.

CORRECTIVE MEASURES ASSESSMENT – 1995

The CMA presented groundwater monitoring, continued institutional controls and existing corrective action recently implemented at the landfill site as the preferred remediation alternative. However, at the end of the two-year monitoring period, compliance wells MPC-1 and HL-90-1, located just outside the northern landfill boundary, remained between 0.005 mg/L and 0.020 mg/L (above the MCL) and demonstrated neither a decreasing or increasing trend in the eight years of record. Thus it was decided by MDEQ and the City that additional corrective action was required.

FIRST ADDENDUM TO CORRECTIVE MEASURES ASSESSMENT – 1997-1998

A landfill gas extraction system (GES) was selected as the next preferred corrective action. Since a GES was required to protect public health in the YMCA and Armory buildings located next to the landfill boundary, it was decided that this system would also act as a pilot study for groundwater remediation. The system was installed in the spring of 1998 and was operational by June. Air quality samples were collected and analyzed

and were found to contain no traces of PCE. It was then decided that either an expanded GES system should be installed and/or additional corrective measures implemented.

SECOND ADDENDUM TO CMA – 1998-1999

Air Sparging

Air sparging with the option of soil venting was investigated as an additional corrective measure for the Helena landfill groundwater contamination as part of the second addendum. Air sparging is a technology in which air is injected into the groundwater to volatilize residual contaminants in-situ. The effectiveness of the technology is primarily a function of the strippability and/or volatility of the contaminants and the nature and extent of the air pathways. Although constituents met the criteria for strippability and volatility indicating that these compounds would be highly amenable to air sparging, the high variability in the vertical stratigraphy in this area made this option unattractive.

Groundwater Extraction

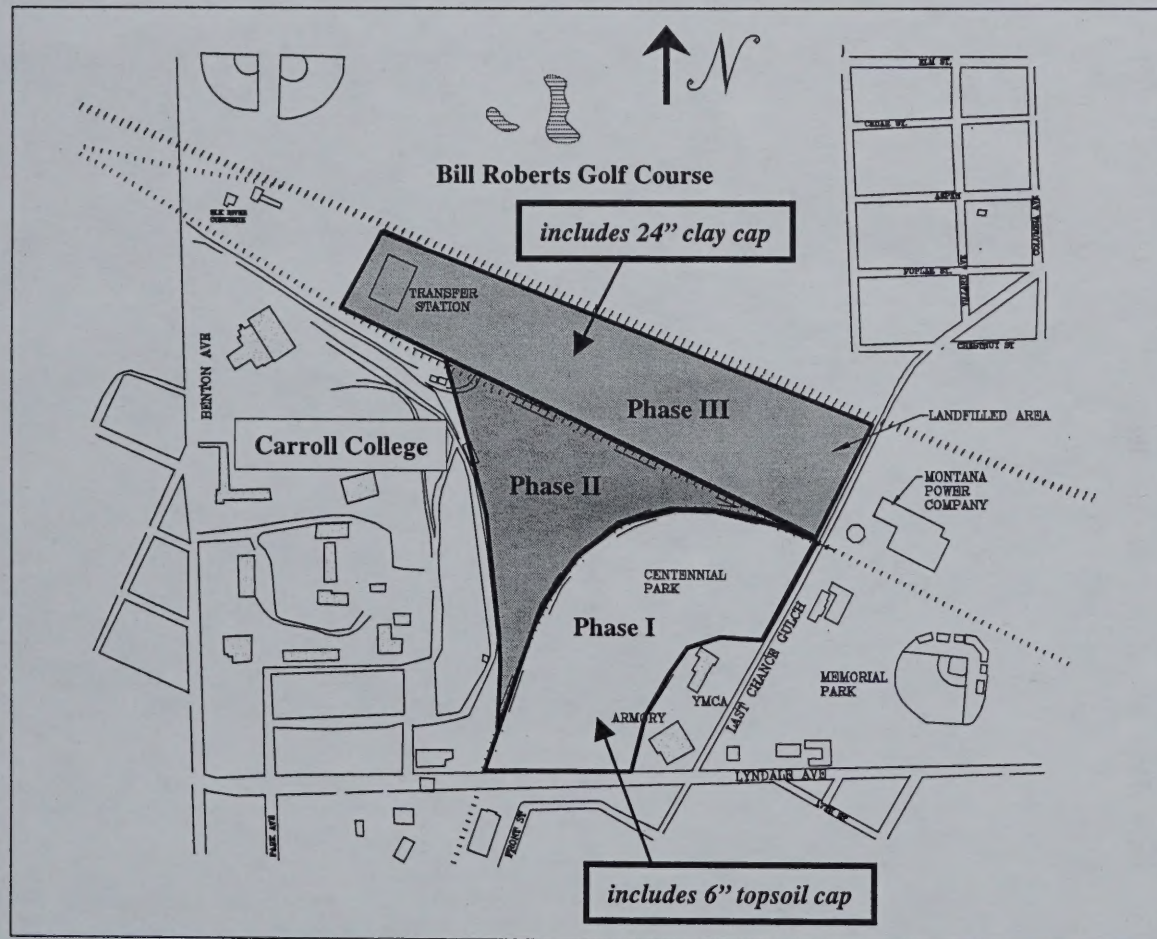
The critical factors of a pump-and-treat system are the number of wells required (capital cost), the volume of water that needs to be removed, and what to do with the water after treatment. Although these factors did not initially appear favorable in this situation, it was decided to evaluate the potential effectiveness of a groundwater extraction system by developing a groundwater flow model using Modflow software. A model grid was assigned to the area of interest and model parameters such as hydraulic conductivity, transmissivity, and the depth to bedrock were assigned to each block of the grid using available well logs and pump test data. The model was then “calibrated” by varying these input parameters and the recharge values associated with the golf course, soccer fields and storm sewer outfall within acceptable ranges to reproduce the existing water table.

The groundwater flow paths leaving the landfill were predicted by placing a water particle in each cell along the northern edges of the Phase I and Phase II landfills and running the model for 100 years. The model showed that the groundwater mound resulting from the storm sewer outfall produces a hydrologic divide which causes a large percentage of the groundwater flowing beneath the landfill to flow west and north along the western edge of the golf course.

Next, pumping wells were added to the model to simulate the effects of groundwater extraction. The same water particles used before were modeled again with three of the landfill pumping wells set to pump 20-25 gallons per minute. This steady state capture scenario, indicated that about 98% of the water particles leaving the landfill were captured by these wells. The extracted groundwater could be used for irrigation of the golf course or Centennial Park; however, irrigation is only feasible six months each year (April through September). To further evaluate this option, a 180-day pumping scenario was developed to evaluate the effects of only extracting water during the irrigation months. Although the model indicated that only 75% of the water particles were captured, this was still be a viable option for the following reasons:

- Concentrations of PCE are at less than 0.020 mg/L in the compliance wells; therefore, removing 75% of the contaminated water may be sufficient to bring concentrations in these wells below the MCL of 0.005 mg/L.
- Because the organic contaminants move slower than the water particles due to their affinity to the soil, more than 75% of these particles may be captured.
- The additional mixing and aeration of the groundwater within the capture zone caused by intermittent pumping of the extraction wells will help to further decrease concentrations of VOCs in the groundwater.

It was decided that groundwater extraction was thus a viable option since only three wells would be required, only 65 gpm of water need to be removed, and the treated water could be used for irrigation water on the golf course. The full scale design involved routing the extracted water to the existing golf course irrigation ponds and spraying the water through aeration nozzles to remove the PCE. Contingencies for additional treatment or a second row of extraction wells were also considered during the design.



- ⇒ Dumping began in late 1800s
- ⇒ Class II Landfill (no hazardous wastes)
- ⇒ 37-acre area
- ⇒ 75 tons/day since early 1970s

Dates of Operation

- Phase I:* Late 1800s - 1979
- Phase II:* 1979-1983
- Phase III:* 1983-1994

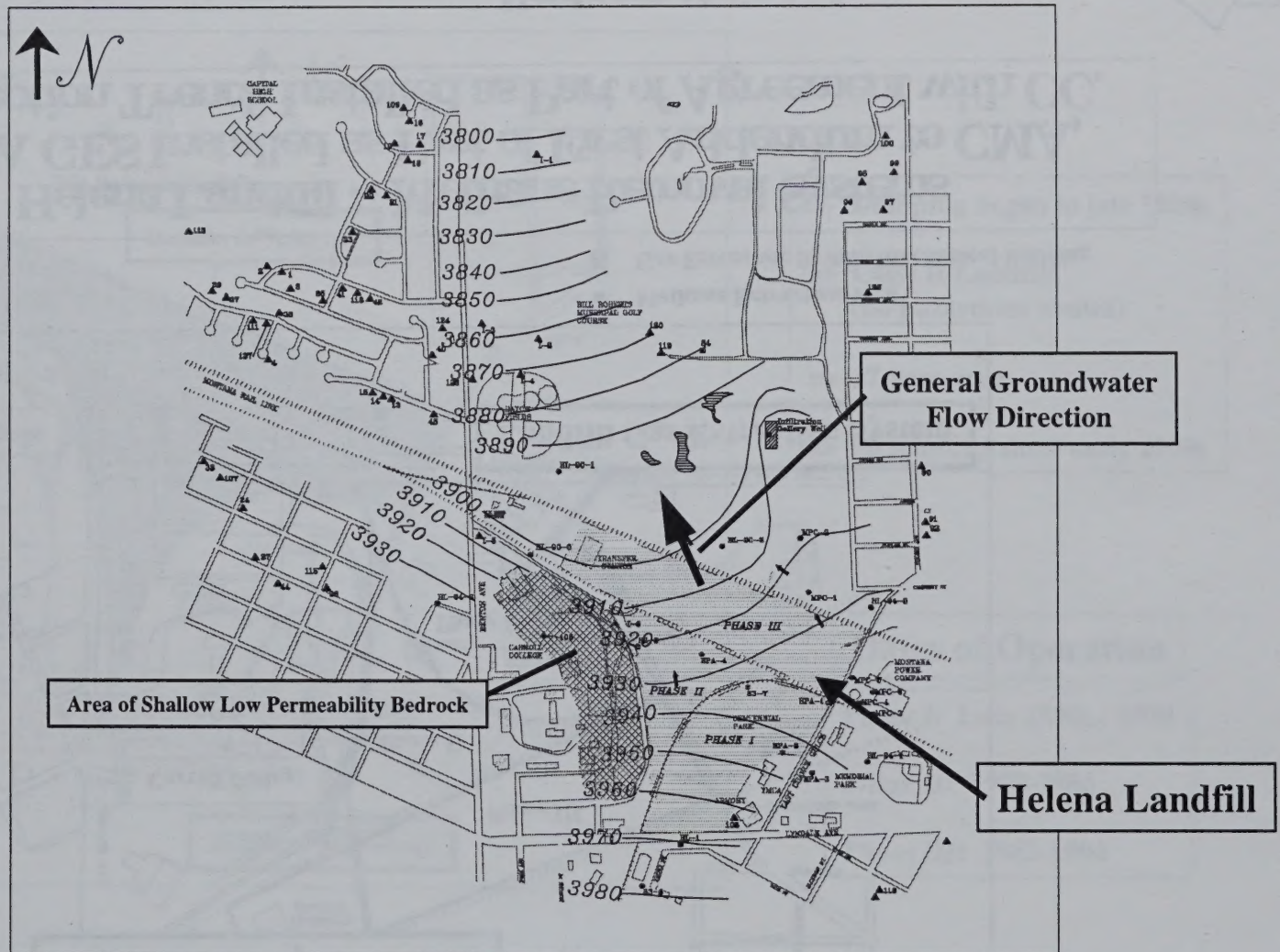
Helena Landfill -- Location and History



Groundwater
Monitoring Results

Flow Direction

Groundwater flows
to N-NW

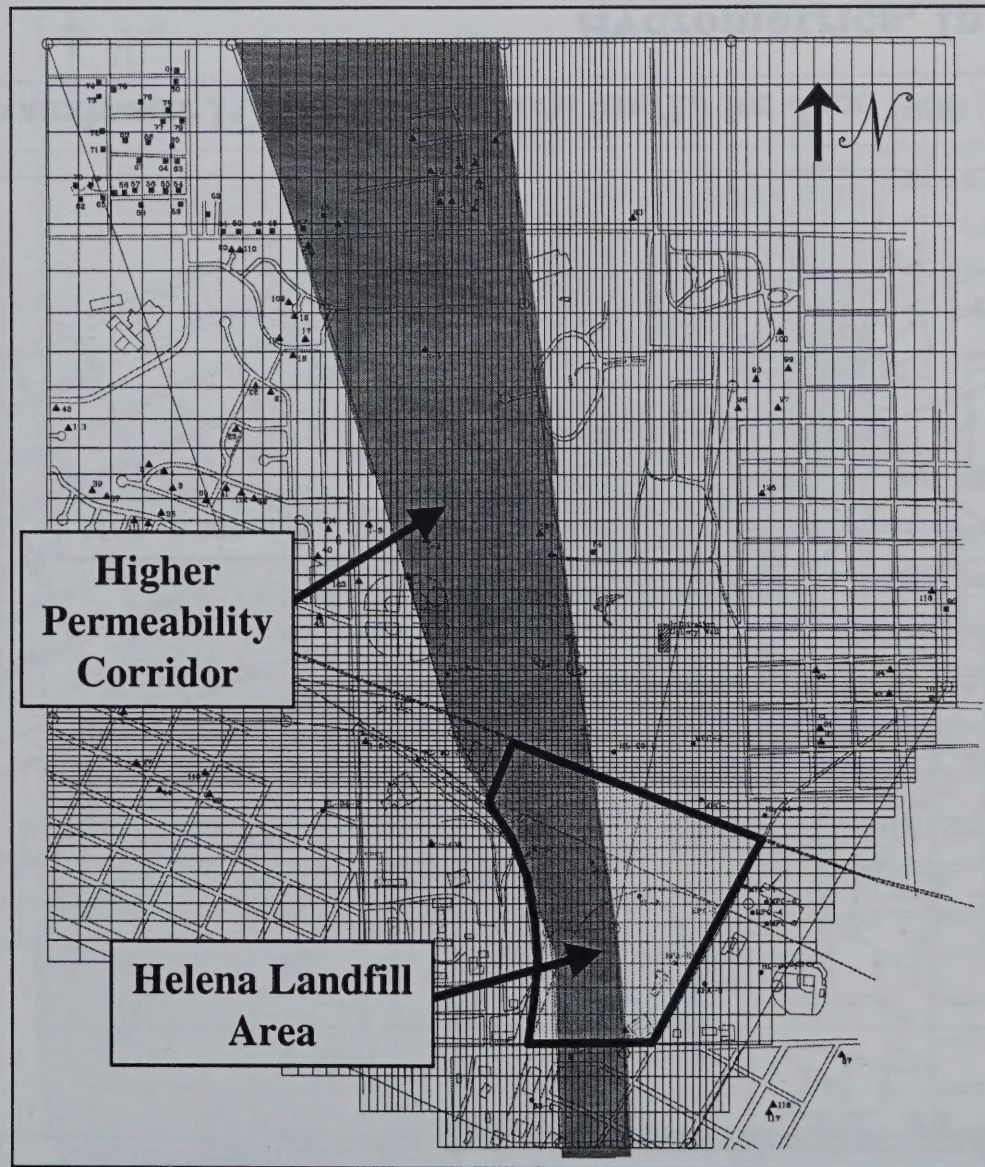


December 1998 Potentiometric Map

Hydrometrics, Inc.

Consulting Scientists, Engineers, and Contractors

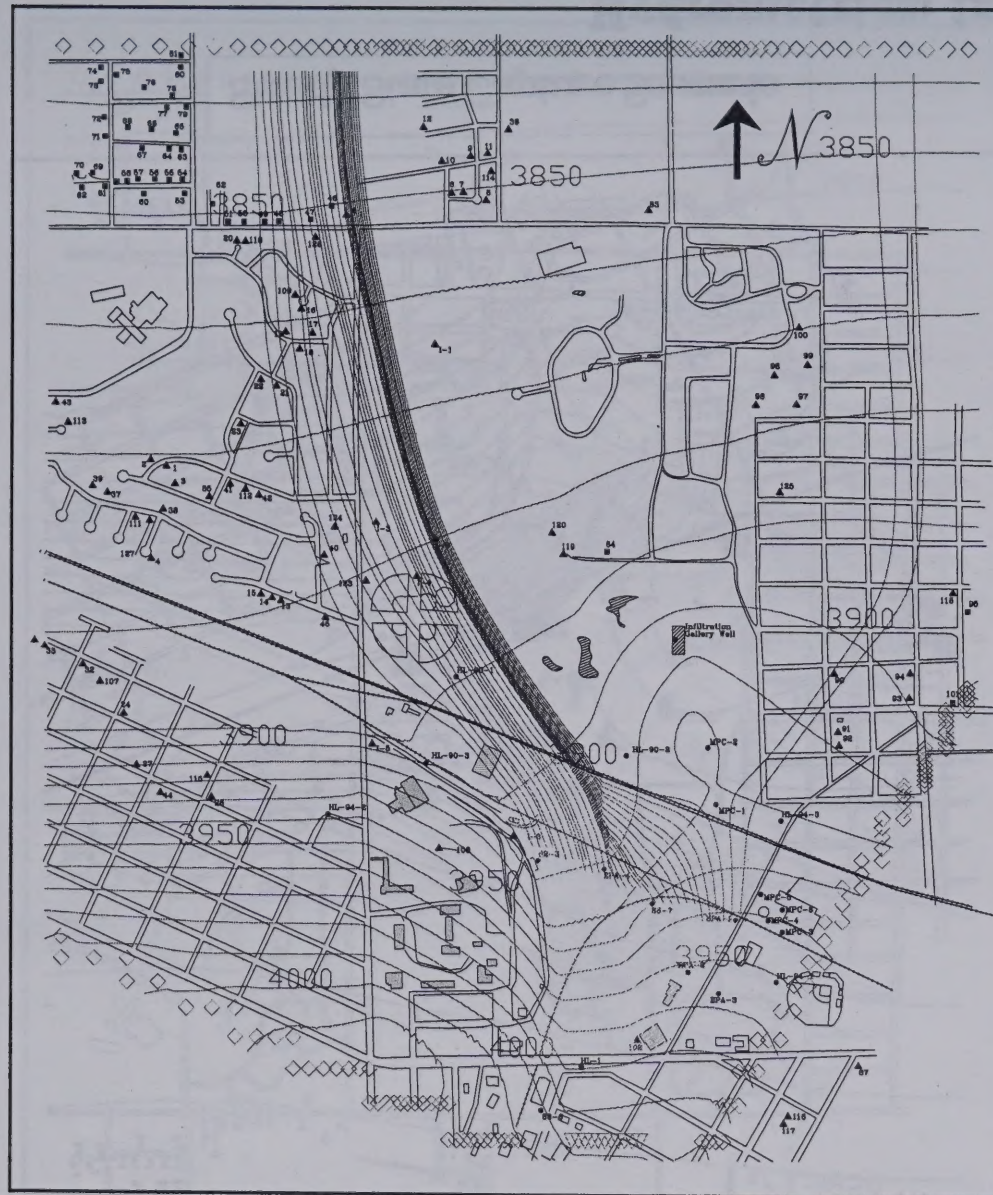




Model Design and Assignment of Aquifer Parameters

Hydrometrics, Inc.

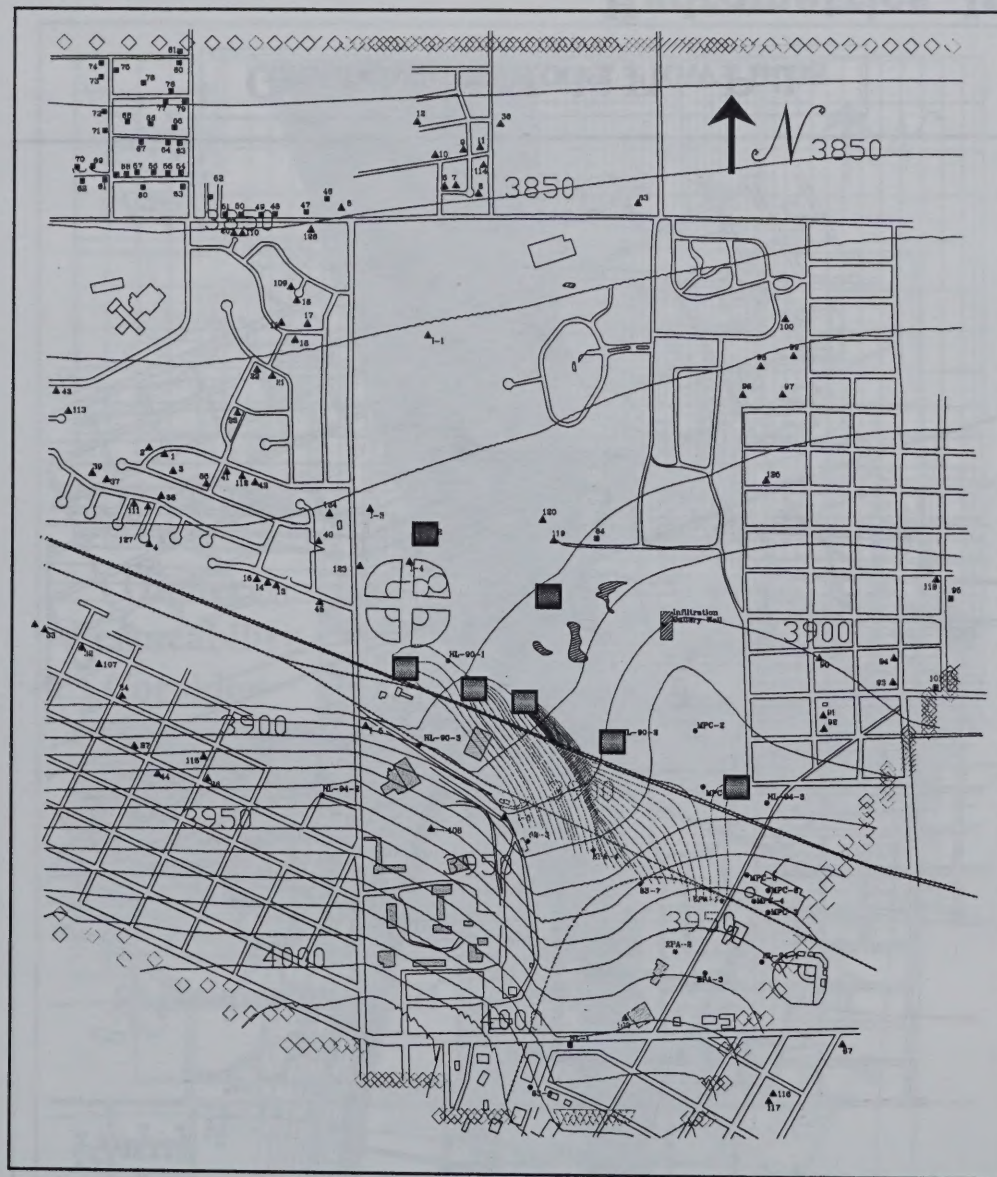
Consulting Scientists, Engineers, and Contractors



Groundwater Model Flow Paths

Hydrometrics, Inc.

Consulting Scientists, Engineers, and Contractors



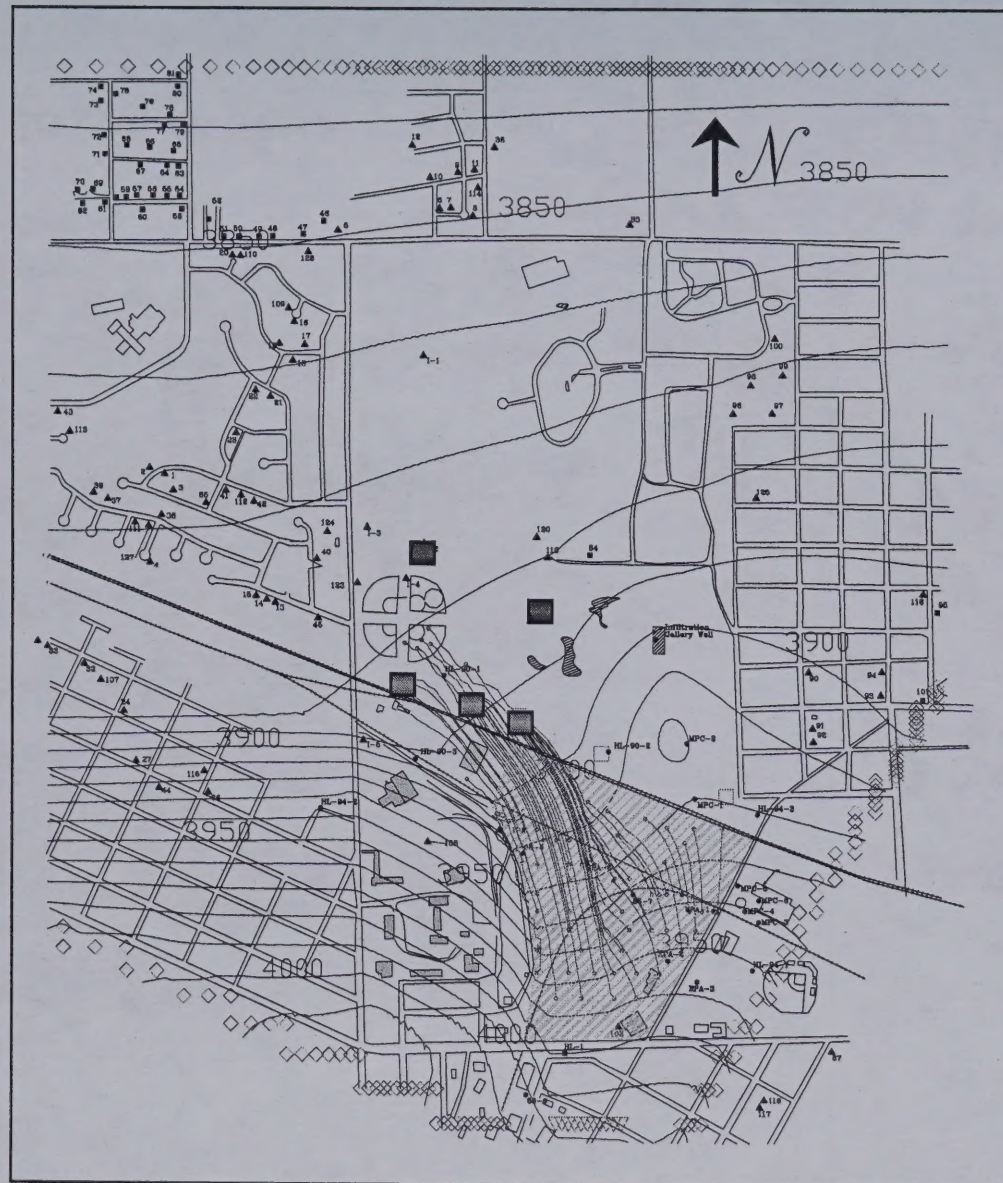
■ Proposed
Capture Wells

■ Existing
Irrigation Wells

Steady State Capture Scenario

Hydrometrics, Inc.

Consulting Scientists, Engineers, and Contractors

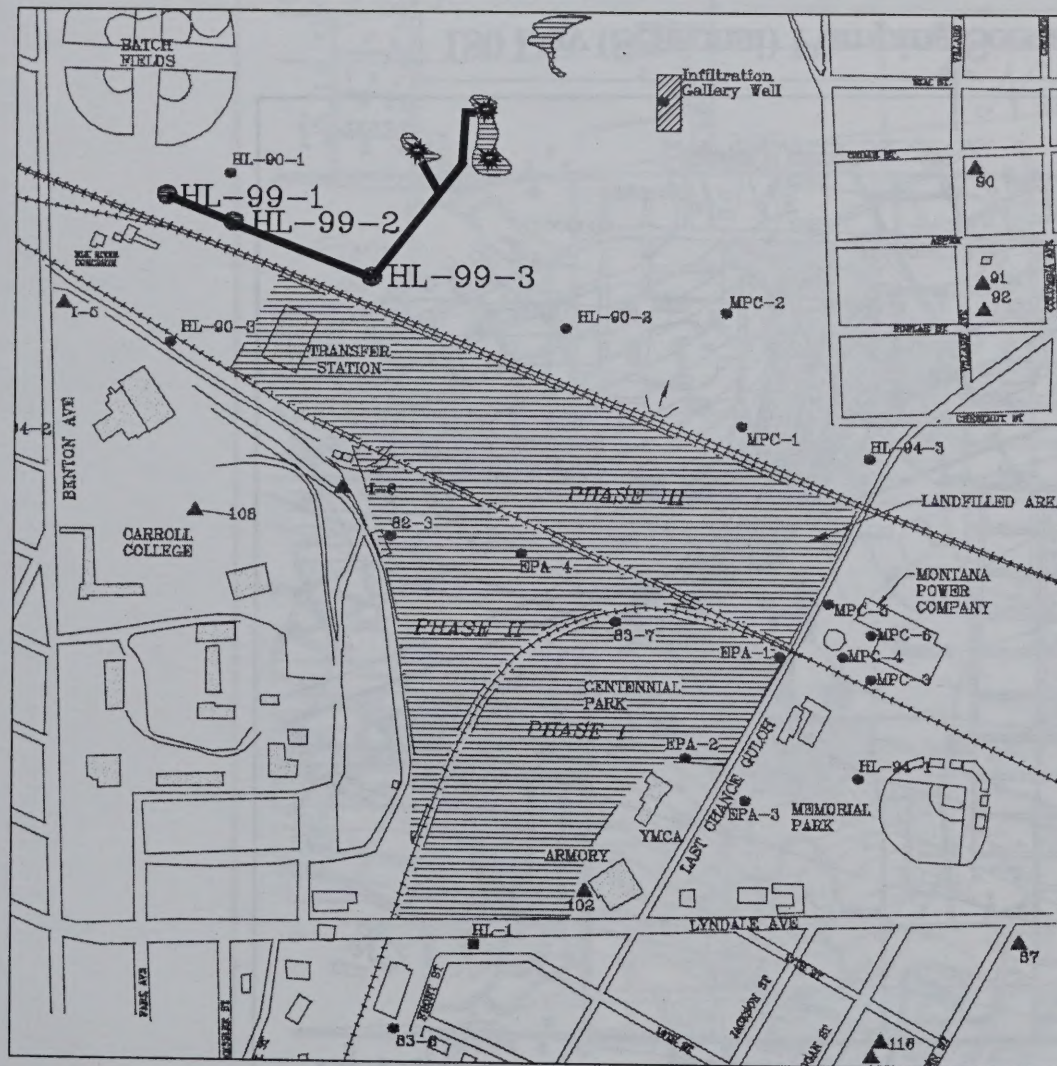


■ Proposed
Capture Wells

■ Existing
Irrigation Wells

180 Day (Seasonal) Pumping Scenario

Hydrometrics, Inc.
Consulting Scientists, Engineers, and Contractors



Irrigation Conceptual Design

New Irrigation/Pumping Wells

Fountain Discharge (Aeration Treatment)

New Irrigation/Water Transport Lines

During Spring Start-Up:

- ◆ Optimize system performance.
- ◆ Confirm water quality after spray treatment.

During 2-year Evaluation Period:

- ◆ Optimize system performance.
- ◆ Monitor capture system effectiveness. Explore alternatives as required.

Hydrometrics, Inc.

Consulting Scientists, Engineers, and Contractors



Montana Department of
ENVIRONMENTAL QUALITY

Judy H. Martz, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.state.mt.us

April 25, 2001

John Rundquist
City of Helena
316 N. Park Ave.
Helena, Montana 59623

MAILED
04-27-01 JH

RE: CITY OF HELENA CLASS II (INACTIVE) LANDFILL, LEWIS AND CLARK COUNTY – LICENSE NO. 90
GROUND WATER MONITORING, CORRECTIVE MEASURES – FINANCIAL ASSURANCE INFORMATION

Dear Mr. Rundquist:

Recently, it was brought to my attention according to ARM 17.50.540(4)(a), the following information needs to be submitted to the Program as part of the financial assurance requirements for a solid waste facility involved in ground water corrective action(s):

- *a detailed [itemized] written estimate, in current dollars, of the cost of hiring a third party to perform the corrective action in accordance with the program required under ARM 17.50.710.*
- *total costs of corrective action activities as described in the corrective action plan for the entire corrective action period.*

In summary, the Program presently needs an estimate for the total cost of the selected corrective action(s) and the approximate time required to meet clean-up requirements/standards in ARM 17.50.710(8)(e)(ii).

For future reference, the Program will need the following additional information regarding the estimated cost for corrective action:

- | | |
|-------------------------|--|
| ARM 17.50.540(4)(a)(i) | An annual adjustment of the original estimated cost for inflation. |
| ARM 17.50.540(4)(a)(ii) | An increase in the estimated cost for additional corrective action(s). |

MAILED

Optimize system performance.

Confirm water quality after spray treatment.

During 2-year Evaluation Period.

Optimize system performance.

Monitor capture efficiency.

Minimize environmental impacts.

RE: CITY OF NEWARK CLASS B (WASTEWATER) TREATMENT PLANT AND

CLARK COUNTY - LANE NO. 10

GROUND WATER MONITORING CORRELATION MEASUREMENT - PHASE A

ASSURANCE DEDICATION

Dear Sir,

Reference is made to the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

enclosed copy of the letterhead memorandum dated 10/1/78, and the

John Rundquist

City of Helena Landfill – Ground Water Corrective Action-Financial Assurance

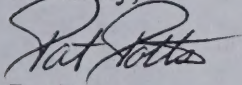
April 25, 2001

Page 2

ARM 17.50.540(4)(a)(iii) A decrease in the estimated cost when the estimate exceeds the maximum remaining costs of the corrective action(s).

Thank you for your prompt attention to these matters. I may be contacted at the Permitting and Compliance Division, Community Services Bureau, Waste Management Section, phone (406)444-0538.

Sincerely,

A handwritten signature in black ink, appearing to read "Pat Potts", written over the word "Sincerely,".

Pat Potts

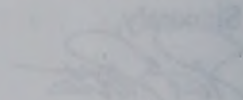
Environmental Specialist

Solid Waste Program

John R. ...
City of ...
April 12, 2001
Page 2

ALM 17302404(X) ...
A decrease in the estimated cost when the estimate exceeds
the maximum remaining costs of the corrective action(s).

Thank you for your prompt attention to these matters. I was last contacted at the
Planning and Compliance Division, Community Services Bureau, Waste Management
Section, phone (408) 444-0333.

Respectfully,

Pat ...
Environmental Specialist
Solid Waste Program

INITIALS 3

DATE

4/26/01SW OUTGOING CORRESPONDENCE 2001☐ NEW APPLICATION/LICENSE

Initial / Date

Mike D.

Janet H.

HAC

Rick T.

Jon D/ Other

☐ HEALTH OFFICER CARD

Initial / Date

Mike D.

Karen

HAC

☐ INSPECTIONS

Initial / Date

Pat C.

Janet H.

Karen

Rick T.

☐ CLOSURES

Initial / Date

Mike D.

Janet H.

Karen

HAC

Rick T/ Other

☐ FEES

Initial / Date

Mike D.

Janet H.

HAC

☐ COMPLAINTS

Initial / Date

Pat C.

Janet H.

Karen

☒ GROUND WATER

Initial / Date

Janet H.

Pat C

Rick T.

☐ GENERAL CORRESPONDENCE

Initial / Date

Pat C. / Mike D.

Janet H.

Rick T.

Jon D/ Other

☐ MISCELLANEOUS

Initial / Date

FILE

Path

Lewis & Clark Co
City of Helena (closed) #90
ground water mon (corr meas)



90

L+C

County _____
Facility & # Helena I.A.

Closure _____ Landfarm

Finan Assur _____ Liner

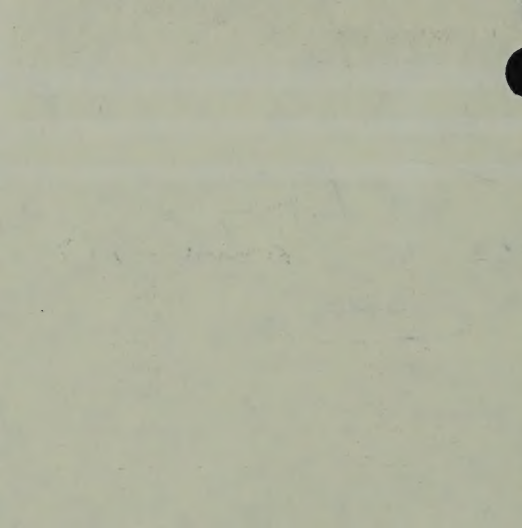
GW Corr Meas _____ Methane

GW Monitoring _____ O & M

GW Reports _____ Run - On

Inspections _____

Other: _____





Hydrometrics, Inc.®

consulting scientists, engineers, and contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-1252 E. Bldg.
(406) 443-0760 S. Bldg.
(406) 443-4155 W. Bldg.
www.hydrometrics.com

July 6, 2000

Mr. John Rundquist
Public Works Director
City of Helena
City/County Building
316 North Park Ave.
Helena, MT 59623

RECEIVED

JUL 07 2000

MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

Dear John,

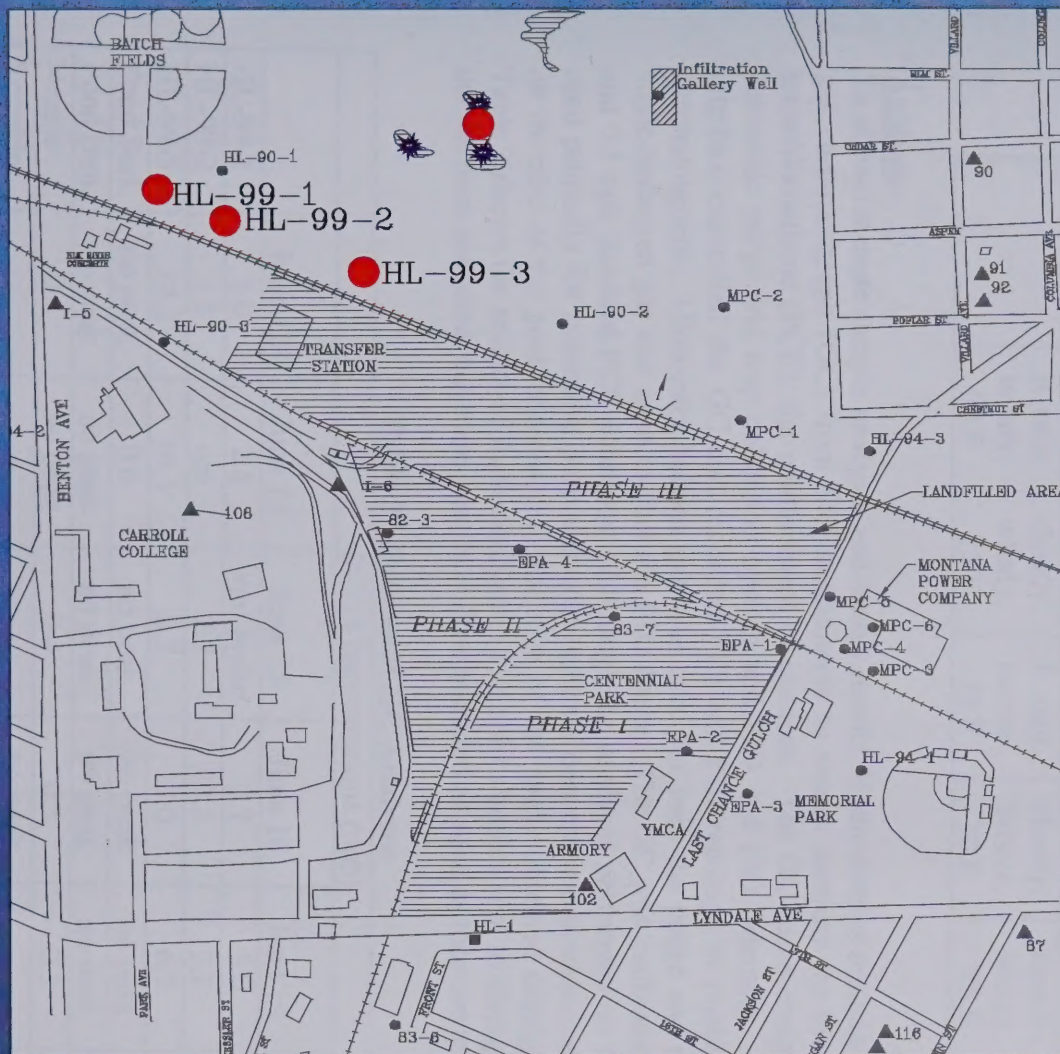
This letter presents Hydrometrics' evaluation of the initial performance of the groundwater extraction system. This system was installed as part of the second addendum to the Corrective Measures Assessment (Hydrometrics, 1999) for the Helena landfill and began operation on June 12, 2000.

System Start-Up

The pumps in the three extraction wells were all turned on the morning of June 12, 2000. Initial flow rates for each well ranged from 42 to 50 gpm according to the flow meters present in each of the well control boxes. These flows dropped back to approximately 35 gpm with all three wells pumping simultaneously. The flows were throttled back to approximately 25 gpm in each well using the ball valve located in each of the control boxes. The system was monitored for several hours to check for leaks and other problems and to monitor water levels in the extraction wells.

Sampling

Water sampling was conducted each afternoon from June 12 through June 19 (except for Saturday, June 17, and Sunday, June 18). Samples were collected from each well head, the east pond surface, the east pond at depth, and from the north atomizing spray nozzle in the east pond. Figure 1 shows the approximate sampling locations. At each well head, the flow was recorded and a sample was collected from the hose bib. At the pond, a boat was used to collect a sample from the pond surface near the center of the pond. A peristaltic pump was then used to collect a sample from near the bottom of the pond. Finally, a stainless steel bowl was used to collect nozzle spray just before it hit the pond. On June 16, a sample was also collected from the irrigation system using the steel bowl to catch the sprinkler water before it reached the ground. All samples were collected in 40 mL glass vials, preserved with hydrochloric acid, and refrigerated prior to analysis. Split samples were collected on June 19 at the pond surface, pond bottom, and spray nozzle and sent to Energy Labs for analysis. Table 1 includes the flow rates, weather conditions, and samples collected during the sampling period.



Sample Location

New Irrigation/Pumping Wells

Fountain Discharge (Aeration Treatment)

Figure 1. Groundwater Extraction System Startup Sampling Locations

Hydrometrics, Inc.

Consulting Scientists, Engineers, and Contractors

Table 1. Sampling Schedule and Conditions

	June 12	June 14	June 15	June 16	June 19
Sample Location					
HL-99-1	X	X	X	X	X
HL-99-2	X	X	X	X	X
HL-99-3	X	X	X	X	X
Pond Surf.	X	X	X	X	X-split
Pond Btm.	X	X	X	X	X-split
Nozzle	X	X	X	X	X-split
Sprinklers				X	
Flows (gpm)					
HL-99-1	22	22	22	22	21
HL-99-2	25	27	25	26	26
HL-99-3	25	25	25	26	24
Weather					
	lt. rain, windy, 60 F	cloudy, windy, 75 F	lt. rain, breeze, 75 F	cloudy, breeze, 70 F	cloudy, windy, 85 F

Analysis

To allow for more sample analyses and timely results, Hydrometrics rented a Model 8260 gas chromatograph (GC) from SRI instruments to screen samples for the presence of tetrachloroethene (PCE), the contaminant of concern. The GC came equipped with an automatic purge and trap collection system and PID and FID detectors. A computer interface controlled the GC and recorded PID and FID readings to produce complete chromatograms. Ultra-pure helium gas was used for both the purge and carrier gases while hydrogen gas was used to fuel the FID flame. The GC was calibrated with 5 ppb and 0.5 ppb standard PCE solutions. Although the analyses performed on the GC were used primarily for screening purposes, approximate concentrations were assigned based on the size of the peak compared to the size of the peaks obtained during calibration. Table 2 shows the results of these analyses. The split samples sent to Energy Labs have not yet been analyzed, but these results will be included as soon as they are received.

Table 2. Results of GC Analyses

	PCE Concentrations (ppb)					
	June 12	June 14	June 15	June 16	June 19	June 19 – split
HL-99-1	3.0	2.8	vial broke	2.7	3.0	--
HL-99-2	1.2	nm	2.7	2.2	2.2	--
HL-99-3	14.2	10.1	8.2	7.0	6.7	--
Pond Surf.	no peak	0.6	no peak	no peak	no peak	no peak
Pond Btm.	no peak	no peak	no peak	no peak	no peak	no peak
Nozzle	0.6	no peak	0.4	0.3	0.3	<1
Sprinkler	--	--	--	no peak	--	--

* No peak indicates that any concentrations of PCE present were below the detection limit of the GC being used.

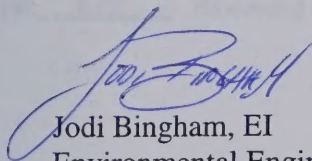
Results and Conclusions

The system appears to be operating as designed. The pumps have been able to maintain the flows estimated necessary during modeling and the nozzle appears to be volatilizing the majority of the PCE. The residual PCE appears to be removed in the pond. There is no evidence that the system is land-applying water with concentrations of PCE above the required reporting limit of 0.5 ppb, as required by MDEQ in their letter to Dennis Taylor dated September 13, 1999.

As required by MDEQ, Hydrometrics would recommend that the City collect VOC samples of the pond surface water and sprinkler effluent on a monthly basis for the remainder of this operating season. In addition, the extraction wells and compliance wells should be sampled again as part of the September quarterly sampling event to monitor any effects the extraction system may be having on downgradient water quality. At this time, we do not feel that additional water treatment prior to discharge is required. After a two-year monitoring period, the City should evaluate the effectiveness of the system in reducing concentrations of PCE in the compliance wells and determine whether additional corrective measures may be necessary.

If you have any questions or comments concerning the information presented here, please don't hesitate to give me a call.

Sincerely,



Jodi Bingham, EI
Environmental Engineer/Chemist

c: Pat Crowley, MDEQ

EPA METHOD 8260B

Client: Hydrometrics

Sample ID: HL-0006-100

Project Info: PROJ. NO. 0054, CITY OF HELENA GW EXTRACTION

Lab ID: 001-00-55086

Matrix: WATER

Date Reported: 06/30/00

Date Sampled: 6/19/00 14:10

Date Received: 06/21/00

Date Analyzed: 6/28/00 17:30

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION ($\mu\text{g/L}$)	LIMIT OF QUANTITATION($\mu\text{g/L}$)
127-18-4	Tetrachloroethene	ND	1.0

ND=Not detected at a level equal to or above the quantitation limit.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu\text{g/L}$)		PERCENT	ACCEPTANCE
	ADDED	MEASURED	RECOVERY	RANGE
Dibromofluoromethane	10	10.2	102	75-120
1,2-Dichloroethane d4	10	9.08	91	75-120
Toluene d8	10	9.61	96	80-120
p-Bromofluorobenzene	10	10.4	104	80-120

REPORT COMMENTS: None

Analyst: RLA Reviewing Supervisor: my

/chem/IONTRAP1.I/vb062600.b/15jun26.d

EPA METHOD 8260B

Client: Hydrometrics
Sample ID: HL-0006-101 *Pond at Depth*
Project Info: PROJ. NO. 0054, CITY OF HELENA GW EXTRACTION
Lab ID: 002-00-55086
Matrix: WATER

Date Reported: 06/30/00
Date Sampled: 6/19/00 14:15
Date Received: 06/21/00
Date Analyzed: 6/28/00 18:08

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION ($\mu\text{g/L}$)	LIMIT OF QUANTITATION($\mu\text{g/L}$)
127-18-4	Tetrachloroethene	ND	1.0

ND=Not detected at a level equal to or above the quantitation limit.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu\text{g/L}$)		PERCENT	ACCEPTANCE RANGE
	ADDED	MEASURED	RECOVERY	
Dibromofluoromethane	10	10.4	104	75--120
1,2-Dichloroethane d4	10	9.10	91	75--120
Toluene d8	10	9.52	95	80--120
p-Bromofluorobenzene	10	10.6	106	80--120

REPORT COMMENTS: None

Analyst: LER Reviewing Supervisor: LM /chem/IONTRAP1.Uvb062000.b/16/jun26.d

EPA METHOD 8260B

Client: **Hydrometrics**
Sample ID: HL-0006-102 *Nozzle Spray*
Project Info: PROJ: NO. 0054, CITY OF HELENA GW EXTRACTION
Lab ID: 003-00-55086
Matrix: WATER

Date Reported: 06/30/00
Date Sampled: 6/19/00 14:20
Date Received: 06/21/00
Date Analyzed: 6/28/00 18:48

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION ($\mu\text{g/L}$)	LIMIT OF QUANTITATION($\mu\text{g/L}$)
127-18-4	Tetrachloroethene	(0.96)(J)	1.0

ND=Not detected at a level equal to or above the quantitation limit.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu\text{g/L}$)		PERCENT	ACCEPTANCE
	ADDED	MEASURED	RECOVERY	RANGE
Dibromofluoromethane	10	9.89	99	75--120
1,2-Dichloroethane d4	10	8.85	88	75--120
Toluene d8	10	9.37	94	80--120
p-Bromofluorobenzene	10	10.8	108	80--120

REPORT COMMENTS: None

Analyst: 2RR Reviewing Supervisor: lm /chem/10NTRAP1..lvb082800.b/17jun28.d

90

L+C

County

Facility & #

Helena 1. A

Closure

Landfarm

Finan Assur

Liner

GW Corr Meas

Methane

GW Monitoring

O & M

GW Reports

Run - On

Inspections

Other:





Hydrometrics, Inc.®
consulting scientists, engineers, and contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-1252 E. Bldg.
(406) 443-0760 S. Bldg.
(406) 443-4155 W. Bldg.
www.hydrometrics.com

June 29, 2000

Mr. Pat Crowley
Department of Environmental Quality
Permitting and Compliance Division
Community Services Bureau
P.O. Box 200901
Helena, MT 59620

Dear Pat,

Hydrometrics has completed the start up of the groundwater extraction system installed as part of the Second Addendum to the Correctives Measures Assessment for the Helena Landfill (Hydrometrics, 1999). We rented a GC as you suggested and results were very good (most below detect). However, the split samples that we sent to the lab for confirmation have not been analyzed yet and probably won't be until next week. Consequently, I would like to request a week extension on the June 30, 2000 deadline established in your letter dated September 13, 1999 for transmittal of sample results. We will submit the final report next Thursday, July 7, 2000.

If you have any questions or concerns, please call me.

Sincerely,

Jodi Bingham, EI
Environmental Engineer/Chemist

RECEIVED

JUL 03 2000

MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

90

County L+C
Facility & # Helena
Closure _____ Landfarm
Finan Assur _____ Liner
GW Corr Meas _____ Methane
GW Monitoring _____ O & M
GW Reports _____ Run - On
Inspections _____
Other: _____



1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
2205
2206
2207
2208
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2220
2221
2222
2223
2224
2225
2226
2227
2228
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
2240
2241
2242
2243
2244
2245
2246
2247
2248
2249
2250
2251
2252
2253
2254
2255
2256
2257
2258
2259
2260
2261
2262
2263
2264
2265
2266
2267
2268
2269
2270
2271
2272
2273
2274
2275
2276
2277
2278
2279
2280
2281
2282
2283
2284
2285
2286
2287
2288
2289
2290
2291
2292
2293
2294
2295
2296
2297
2298
2299
2300
2301
2302
2303
2304
2305
2306
2307
2308
2309
2310
2311
2312
2313
2314
2315
2316
2317
2318
2319
2320
2321
2322
2323
2324
2325
2326
2327
2328
2329
2330
2331
2332
2333
2334
2335
2336
2337
2338
2339
2340
2341
2342
2343
2344
2345
2346
2347
2348
2349
2350
2351
2352
2353
2354
2355
2356
2357
2358
2359
2360
2361
2362
2363
2364
2365
2366
2367
2368
2369
2370
2371
2372
2373
2374
2375
2376
2377
2378
2379
2380
2381
2382
2383
2384
2385
2386
2387
2388
2389
2390
2391
2392
2393
2394
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
2406
2407
2408
2409
2410
2411
2412
2413
2414
2415
2416
2417
2418
2419
2420
2421
2422
2423
2424
2425
2426
2427
2428
2429
2430
2431
2432
2433
2434
2435
2436
2437
2438
2439
2440
2441
2442
2443
2444
2445
2446
2447
2448
2449
2450
2451
2452
2453
2454
2455
2456
2457
2458
2459
2460
2461
2462
2463
2464
2465
2466
2467
2468
2469
2470
2471
2472
2473
2474
2475
2476
2477
2478
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
2489
2490
2491
2492
2493
2494
2495
2496
2497
2498
2499
2500
2501
2502
2503
2504
2505
2506
2507
2508
2509
2510
2511
2512
2513
2514
2515
2516
2517
2518
2519
2520
2521
2522
2523
2524
2525
2526
2527
2528
2529
2530
2531
2532
2533
2534
2535
2536
2537
2538
2539
2540
2541
2542
2543
2544
2545
2546
2547
2548
2549
2550
2551
2552
2553
2554
2555
2556
2557
2558
2559
2560
2561
2562
2563
2564
2565
2566
2567
2568
2569
2570
2571
2572
2573
2574
2575
2576
2577
2578
2579
2580
2581
2582
2583
2584
2585
2586
2587
2588
2589
2590
2591
2592
2593
2594
2595
2596
2597
2598
2599
2600
2601
2602
2603
2604
2605
2606
2607
2608
2609
2610
2611
2612
2613
2614
2615
2616
2617
2618
2619
2620
2621
2622
2623
2624
2625
2626
2627
2628
2629
2630
2631
2632
2633
2634
2635
2636
2637
2638
2639
2640
2641
2642
2643
2644
2645
2646
2647
2648
2649
2650
2651
2652
2653
2654
2655
2656
2657
2658
2659
2660
2661
2662
2663
2664
2665
2666
2667
2668
2669
2670
2671
2672
2673
2674
2675
2676
2677
2678
2679
2680
2681
2682
2683
2684
2685
2686
2687
2688
2689
2690
2691
2692
2693
2694
2695
2696
2697
2698
2699
2700
2701
2702
2703
2704
2705
2706
2707
2708
2709
2710
2711
2712
2713
2714
2715
2716
2717
2718
2719
2720
2721
2722
2723
2724
2725
2726
2727
2728
2729
2730
2731
2732
2733
2734
2735
2736
2737
2738
2739
2740
2741
2742
2743
2744
2745
2746
2747
2748
2749
2750
2751
2752
2753
2754
2755
2756
2757
2758
2759
2760
2761
2762
2763
2764
2765
2766
2767
2768
2769
2770
2771
2772
2773
2774
2775
2776
2777
2778
2779
2780
2781
2782
2783
2784
2785
2786
2787
2788
2789
2790
2791
2792
2793
2794
2795
2796
2797
2798
2799
2800
2801
2802
2803
2804
2805
2806
2807
2808
2809
2810
2811
2812
2813
2814
2815
2816
2817
2818
2819
2820
2821
2822
2823
2824
2825
2826
2827
2828
2829
2830
2831
2832
2833
2834
2835
2836
2837
2838
2839
2840
2841
2842
2843
2844
2845
2846
2847
2848
2849
2850
2851
2852
2853
2854
2855
2856
2857
2858
2859
2860
2861
2862
2863
2864
2865
2866
2867
2868
2869
2870
2871
2872
2873
2874
2875
2876
2877
2878
2879
2880
2881
2882
2883
2884
2885
2886
2887
2888
2889
2890
2891
2892
2893
2894
2895
2896
2897
2898
2899
2900
2901
2902
2903
2904
2905
2906
2907
2908
2909
2910
2911
2912
2913
2914
2915
2916
2917
2918
2919
2920
2921
2922
2923
2924
2925
2926
2927
2928
2929
2930
2931
2932
2933
2934
2935
2936
2937
2938
2939
2940
2941
2942
2943
2944
2945
2946
2947
2948
2949
2950
2951
2952
2953
2954
2955
2956
2957
2958
2959
2960
2961
2962
2963
2964
2965
2966
2967
2968
2969
2970
2971
2972
2973
2974
2975
2976
2977
2978
2979
2980
2981
2982
2983
2984
2985
2986
2987
2988
2989
2990
2991
2992
2993
2994
2995
2996
2997
2998
2999
3000
3001
3002
3003
3004
3005
3006
3007
3008
3009
3010
3011
3012
3013
3014
3015
3016
3017
3018
3019
3020
3021
3022
3023
3024
3025
3026
3027
3028
3029
3030
3031
3032
3033
3034
3035
3036
3037
3038
3039
3040
3041
3042
3043
3044
3045
3046
3047
3048
3049
3050
3051
3052
3053
3054
3055
3056
3057
3058
3059
3060
3061
3062
3063
3064
3065
3066
3067
3068
3069
3070
3071
3072
3073
3074
3075
3076
3077
3078
3079
3080
3081
3082
3083
3084
3085
3086
3087
3088
3089
3090
3091
3092
3093
3094
3095
3096
3097
3098
3099
3100
3101
3102
3103
3104
3105
3106
3107
3108
3109
3110
3111
3112
3113
3114
3115
3116
3117
3118
3119
3120
3121
3122
3123
3124
3125
3126
3127
3128
3129
3130
3131
3132
3133
3134
3135
3136
3137
3138
3139
3140
3141
3142
3143
3144
3145
3146
3147
3148
3149
3150
3151
3152
3153
3154
3155
3156
3157
3158
3159
3160
3161
3162
3163
3164
3165
3166
3167
3168
3169
3170
3171
3172
3173
3174
3175
3176
3177
3178
3179
3180
3181
3182
3183
3184
3185
3186
3187
3188
3189
3190
3191
3192
3193
3194
3195
3196
3197
3198
3199
3200
3201
3202
3203
3204
3205
3206
3207
3208
3209
3210
3211
3212
3213
3214
3215
3216
3217
3218
3219
3220
3221
3222
3223
3224
3225
3226
3227
3228
3229
3230
3231
3232
3233
3234
3235
3236
3237
3238
3239
3240
3241
3242
3243
3244
3245
3246
3247
3248
3249
3250
3251
3252
3253
3254
3255
3256
3257
3258
3259
3260
3261
3262
3263
3264
3265
3266
3267
3268
3269
3270
3271
3272
3273
3274
3275
3276
3277
3278
3279
3280
3281
3282
3283
3284
3285
3286
3287
3288
3289
3290
3291
3292
3293
3294
3295
3296
3297
3298
3299
3300
3301
3302
3303
3304
3305
3306
3307
3308
3309
3310
3311
3312
3313
3314
3315
3316
3317
3318
3319
3320
3321
3322
3323
3324
3325
3326
3327
3328
3329
3330
3331
3332
3333
3334
3335
3336
3337
3338
3339
3340
3341
3342
3343
3344
3345
3346
3347
3348
3349
3350
3351
3352
3353
3354
3355
3356
3357
3358
3359
3360
3361
3362
3363
3364
3365
3366
3367
3368
3369
3370
3371
3372
3373
3374
3375
3376
3377
3378
3379
3380
3381
3382
3383
3384
3385
3386
3387
3388
3389
3390
3391
3392
3393
3394
3395
3396
3397
3398
3399
3400
3401
3402
3403
3404
3405
3406
3407
3408
3409
3410
3411
3412
3413
3414
3415
3416
3417
3418
3419
3420
3421
3422
3423
3424
3425
3426
3427
3428
3429
3430
3431
3432
3433
3434
3435
3436
3437
3438
3439
3440
3441
3442
3443
3444
3445
3446
3447
3448
3449
3450
3451
3452
3453
3454
3455
3456
3457
3458
3459
3460
3461
3462
3463
3464
3465
3466
3467
3468
3469
3470
3471
3472
3473
3474
3475
3476
3477
3478
3479
3480
3481
3482
3483
3484
3485
3486
3487
3488
3489
3490
3491
3492
3493
3494
3495
3496
3497
3498
3499
3500
3501
3502
3503
3504
3505
3506
3507
3508
3509
3510
3511
3512
3513
3514
3515
3516
3517
3518
3519
3520
3521
3522
3523
3524
3525
3526
3527
3528
3529
3530
3531
3532
3533
3534
3535
3536
3537
3538
3539
3540
3541
3542
3543
3544
3545
3546
3547
3548
3549
3550
3551
3552
3553
3554
3555
3556
3557
3558
3559
3560
3561
3562
3563
3564
3565
3566
3567
3568
3569
3570
3571
3572
3573
3574
3575
3576
3577
3578
3579
3580
3581
3582
3583
3584
3585
3586
3587
3588
3589
3590
3591
3592
3593
3594
3595
3596
3597
3598
3599
3600
3601
3602
3603
3604
3605
3606
3607
3608
3609
3610
3611
3612
3613
3614
3615
3616
3617
3618
3619
3620
3621
3622
3623
3624
3625
3626
3627
3628
3629
3630
3631
3632
3633
3634
3635
3636
3637
3638
3639
3640
3641
3642
3643
3644
3645
3646
3647
3648
3649
3650
3651
3652
3653
3654
3655
3656
3657
3658
3659
3660
3661
3662
3663
3664
3665
3666
3667
3668
3669
3670
3671
3672
3673
3674
3675
3676
3677
3678
3679
3680
3681
3682
3683
3684
3685
3686
3687
3688
3689
3690
3691
3692
3693
3694
3695
3696
3697
3698
3699
3700
3701
3702
3703
3704
3705
3706
3707
3708
3709
3710
3711
3712
3713
3714
3715
3716
3717
3718
3719
3720
3721
3722
3723
3724
3725
3726
3727
3728
3729
3730
3731
3732
3733
3734
3735
3736
3737
3738
3739
3740
3741
3742
3743
3744
3745
3746
3747
3748
3749
3750
3751
3752
3753
3754
3755
3756
3757
3758
3759
3760
3761
3762
3763
3764
3765
3766
3767
3768
3769
3770
3771
3772
3773
3774
3775
3776
3777
3778
3779
3780
3781
3782
3783
3784
3785
3786
3787
3788
3789
3790
3791
3792
3793
3794
3795
3796
3797
3798
3799
3800
3801
3802
3803
3804
3805
3806
3807
3808
3809
3810
3811
3812
3813
3814
3815
3816
3817
3818
3819
3820
3821
3822
3823
3824
3825
3826
3827
3828
3829
3830
3831
3832
3833
3834
3835
3836
3837
3838
3839
3840
3841
3842
3843
3844
3845
3846
3847
3848
3849
3850
3851
3852
3853
3854
3855
3856
3857
3858
3859
3860
3861
3862
3863
3864
3865
3866
3867
3868
3869
3870
3871
3872
3873
3874
3875
3876
3877
3878
3879
3880
3881
3882
3883
3884
3885
3886
3887
3888
3889
3890
3891
3892
3893
3894
3895
3896
3897
3898
3899
3900
3901
3902
3903
3904
3905
3906
3907
3908
3909
3910
3911
3912
3913
3914
3915
3916
3917
3918
3919
3920
3921
3922
3923
3924
3925
3926
3927
3928
3929
3930
3931
3932
3933
3934
3935
3936
3937
3938
3939
3940
3941
3942
3943
3944
3945
3946
3947
3948
3949
3950
3951
3952
39



Hydrometrics, Inc.®

consulting scientists, engineers, and contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-1252 E. Bldg.
(406) 443-0760 S. Bldg.
(406) 443-4155 W. Bldg.
www.hydrometrics.com

May 18, 2000

RECEIVED

JUN 02 2000

Mr. John Rundquist
Public Works Director
City of Helena
City/County Building
316 North Park Ave.
Helena, MT 59623

MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

RE: Work Plan for Start-Up of the Helena Landfill Groundwater Extraction System

Dear John:

This letter is to transmit the work plan and budget for the start-up of the groundwater extraction system being installed along the northern boundary of the Helena landfill. Construction of this system is expected to be complete at the end of this week with the final walk through and system testing scheduled for early next week. As you know, we have until June 30 to establish whether this system will reduce tetrachloroethene (PCE) concentrations to below the require reporting level of 0.5 ppb prior to land application without further treatment. We have therefore tentatively scheduled to begin the testing phase of operation the first week in June.

Evaluation of PCE Volatilization

This phase of the system startup will involve renting a portable gas chromatograph (GC) to analyze for PCE. This will allow us to analyze as many samples as necessary to fully characterize the system in operation and get instantaneous results. This will eliminate under-sampling and over-sampling of the system. We will sample each individual extraction well, the combined stream entering the aerators, the aerated groundwater as it contacts the ponds, pond water at various depths and locations (important because the irrigation system removes water from the bottom of the pond) and the water as it is irrigated onto the golf course before contact with the ground. We will sample each day for a period of 1 week or until the system reaches equilibrium. Final samples will then be collected from the combined stream, the pond, and the irrigated water and sent to Energy Laboratories for analysis. This sampling scheme will help us understand how much PCE is being removed in each step of the process and whether an additional treatment step will be necessary.

Upon completion of the testing phase, a letter report summarizing the results and our recommendations will be submitted to the City. A similar letter will then need to be sent to MDEQ by June 30 to either confirm that the current system is sufficient or to present plans to upgrade the system.

Evaluation of Extent of Capture Zone

Before system startup, water levels will be measured in each of the extraction wells and several of the surrounding monitoring wells. Water levels will be measured in these same wells each day for the first week after startup and weekly thereafter for an additional three weeks. The flow rates of the pumps will be adjusted such that the maximum quantity of water is extracted without pumping the well dry causing the pump to cycle. This will determine the optimum flow rate of the system during operation. Upon completion of this evaluation, a letter report will be submitted to the City and MDEQ summarizing our results and recommendations.

The attached table includes the budget for the groundwater extraction system startup. If you have any questions concerning this work or the associated costs, please don't hesitate to call.

Sincerely,

Jodi Bingham, E.I.
Environmental Engineer/Chemist

Attachment

C: Pat Crowley, MDEQ
Larry Kurakowa

**Budget for Groundwater Extraction System StartUp
at Bill Roberts Golf Course**

	Unit Cost:	Unit:	Quantity:	Cost:
Equipment/Supplies:				
Gas Chromatograph	\$132	/ day	10	\$1,320
Shipping	\$75	each way	2	\$150
PCE Standard	\$30	ea.	1	\$30
Solnist	\$9	/ day	6	\$54
Lab Analyses - VOCs	\$165	ea.	3	\$495
Personnel:				
Project Manager	\$95	/ hr.	2	\$190
Engineer II	\$62	/ hr.	35	\$2,170
Technician II	\$41	/ hr.	10	\$410
Total:				\$4,819

90

L+C

County

Facility & # Helena

Closure

Landfarm

Finan Assur

Liner

GW Corr Meas

Methane

GW Monitoring

O & M

GW Reports

Run - On

Inspections

Other: _____

Land
Line
Methane
O & M
O - mu

Land
Line
Methane
O & M
O - mu

FPC

**CITY OF HELENA LANDFILL
MEETING AGENDA**

June 18, 2002

Methane Systems

- All methane monitoring wells are in compliance (with the exception of H-4 in landfill)
- YMCA Gas Extraction System
 - All 5 YMCA monitoring wells in compliance for methane
 - Abandoned four wells along Last Chance Gulch due to construction – will redrill when construction complete
- Carroll College Interception Trench
 - All five Carroll College monitoring wells below detect for methane since installation of trench
 - Have lost two of five monitoring wells (UP-1 and H-24) during construction – need to redrill when construction complete

Groundwater Extraction System

- Two-Year Evaluation Period Ends June 30, 2002
 - Operating according to design
 - Pumped 25M gal in 2001
 - Mass calculations indicate capture of PCE exceeds normal flux through system
 - Compliance well HL-90-1 greater than 5 ppb PCE (as of 3/2001, 8.1 ppb) but decreasing trend
 - Dry except for spring sampling events
 - Consider redrilling deeper well to get seasonal samples
 - Completing transport model using available water level data to evaluate time to reduce PCE to <5ppb
 - Write report after receipt of data from June sampling event – submit Aug/Sept
 - Evaluate need to expand Extraction System
- Water Production Rate not Maximized – *will increase pumping rate on wells 2+3.*
 - Conduct pumping and recovery tests with existing equipment
 - More water for golf course, accelerated PCE removal

± 20 gpm.

PCE Results for Groundwater Extraction System

